News Magazine of the American Standards Association, Incorporated

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Company Members—More than 2000 companies hold membership either directly or by group arrangement through their respective trade associations.

Marginal Notes

Lets Look at the Record—

One hundred and fifty-three new and revised American Standards are presented for the first time in the latest edition of the price list of the American Standards Association published as Part 2 of this issue.

Of these, 45 are in the field of civil engineering and construction, 13 in mechanical and 41 in electrical engineering; 2 are automotive and 1 chemical; 4 concern ferrous and nonferrous materials and metallurgy, 8 textiles, 1 mining, 4 cinematography, 2 office equipment and supplies, 6 gas-burning appliances, 1 drawings and symbols; and 6 are safety codes.

Among the important standards newly offered are those on acoustical terminology, pipe flanges and fittings, power capacitor units, surface roughness and lay, and a series on screws, bolts, nuts and threaded parts.

Three new general publications are also offered in the price list: *The Strange Case of the Seven-Sided Post Hole* is a lighthearted explanation in cartoon and text of the how, why, and effect of standardization. *Dollar Savings Through Standards*, a survey compiled for the ECA, presents detailed reports from 140 companies in 81 industries on money, time, and materials savings effected by the use of standards. *Strengthening America Through Standards* is made up of addresses presented at the second national Standardization Conference last October, on such subjects as industrial standards for defense production, standards for purchasing, and materials conservation.

What to Watch for in July—

Willis S. MacLeod told a recent meeting of ASA's Standards Council that the way has now been opened for greater government use of industry's standards (see page 166).

This was such an important story from industry's viewpoint that it did not stop the Council. It was taken up by the Company Member Conference, the group affiliated with ASA

through which standards men in ASA member companies can discuss problems of special concern to their organizations. At the Conference meeting in Norfolk May 21 and 22, a paper by T. D. Jolly commented on Mr MacLeod's remarks and presented industry's viewpoint on the way in which government departments and industry work together. Rear Admiral Joseph W. Fowler, in charge of cataloging and standardizing activities in the Munitions Board, went into some detail about the government's methods in developing standards. Rear Admiral S. B. Spangler gave his views on standards in relation to design.

A report of this meeting and of the papers presented at the Company Member Conference will be published in the July issue of STANDARDIZATION.

Our Front Cover

Rising in a straight row above the foundry of the Broken Hill Pty Company, Ltd, at Newcastle, New South Wales, Australia, these chimneys are famous as a symbol of the development of industry in this comparatively young country. The Broken Hill Pty Company, organized little more than 30 years ago, has now developed branch companies and related industries throughout Australia. Newcastle, itself, is considered Australia's equivalent to America's Pittsburgh and Britain's Birmingham and Sheffield. The production of its industries is credited with contributing decisively toward stopping the Japanese when they threatened Australia during the last war.

For an American standardization expert's views on industrial development in Australia and the Far East, see "The Far East at the Crossroads," page 169.

Photo courtesy Australian News and Information Bureau.

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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Part 2 — List of American Standards

ASA

Reg. U. S. Pat. Off.

Ruth E. Mason, Editor Nina Asto, Production Editor

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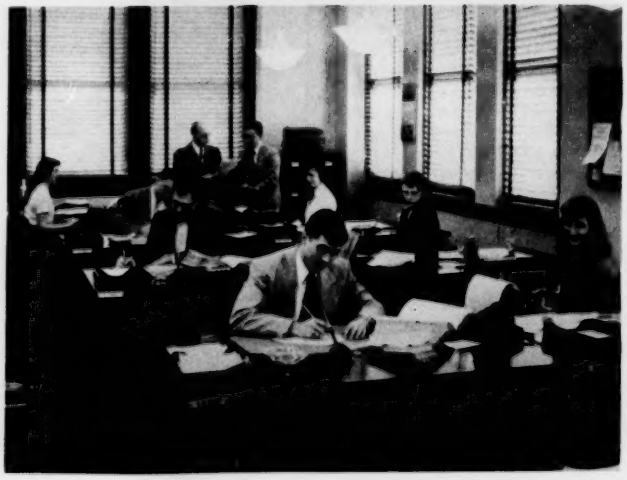
This publication is indexed in the Engineering Index and the Industrial Arts Index.

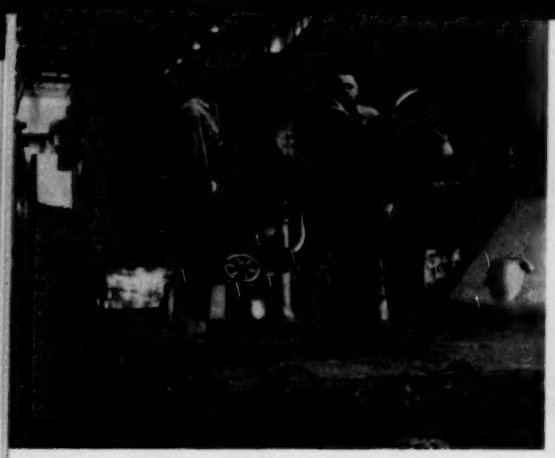
Re-entered as second class matter Jan. 11, 1949, at the P.O., New York, N. Y., under the Act of March 3, 1879.

Above: (Left) Wire Rope, like all supplies and equipment Detroit Edison buys, gets a real workout before it's okayed for the Standards Catalog. Edison purchases are then guided by such listings. Here Purchasing's Jim Carey discusses wire rope with salesman Bud Potter. (Right) Test on preformed wire rope are made by the Engineering Laboratory and Research Department. Claude Weinheimer (left) helps Bob Gill set up part of the test, requested by members of Standards Subcommittee No. 6.

This Subcommittee handled the standardization of the preformed wire rope described in these photos. It concerns itself with such other products as general hardware, tools, chain, and rope. One of 20 subcommittees active in this work, all appointments are made by Vice-President Paul W. Thompson, chairman of the Standards Committee. (Clockwise) August Sellke, Underground Lines; Bernard Trader, Central Heating; Jim Carten, Building Operation; Claude Weinheimer, Engineering Laboratory and Research; George Spencer, Stores; Jim Moyle, Construction; subcommittee secretary Chuck Alber of the Standards Division in Purchasing; chairman George Brown, Construction; Jack Bleakley, Substation; Harry Taylor, Overhead Lines; Virginius Brown, Production; Roy Coughenour, Meter; Harold Denman, Construction; and Ken Hartwell, Purchasing, holding sample of the wire rope.



Standards Division Team writes up accurate and clear descriptions of all items for the Standards Catalog from facts gathered by subcommittees. Such descriptions help to requisition from stock or to buy exactly what is needed. The men attend many subcommittee meetings during the year and serve as secretaries. From the front are Chuck Alber and Toni Bianco; Bert Briggs and Betty Cameron; Bob Rehe and Ann Carvill; Barbara Dean, Catalog Editor Leon Jacobi and Bill Van Dell.



Above: (Left) On-the-Job Test is made at Delray to make sure the wire rope meets requirements. From left: General Electric's Tony Hendricks; Ed Clark, Joe Beeler, Maintenance Engineer of Power Plant Virginius Brown—all of Production. (Right) Down on Paper go the facts about the wire rope after the subcommittee has approved it. Purchasing men Bill Van Dell and Leon Jacobi check over the description as it will be appearing in the Standards Catalog.

Making It Standard

Detroit Edison's Standards Catalog Is An Outstanding Group Achievement in the Science of Purchasing and the Art of Understanding

Prepared by the Detroit Edison Company and reprinted by special permission from The Synchroscope, *March 1952.*

SUGAR and spice and all that's nice—that's what little girls are made of. Not so a modern electric utility, which requires many thousands of purchases every year to build it up, repair it, and keep it running. Few people realize what a big job it is to buy and stock the countless items we need.

Starting about 25 years ago, our Company pioneered a very important and a very interesting phase of purchasing— the standardization of what we buy to the smallest possible array of items . . . the best for the job . . . agreement on types and sizes that will serve more than one department equally well . . . clearly written descriptions of each item to expedite selection, purchase, and even manufacture. This gigantic and continuing task has been worked out so well by Detroit Edison that many other companies here and abroad have adopted our standardization procedures.

One characteristic of a land of plenty like America is the variety of things you can buy, whether you are a Saturday shopper or a purchasing agent. There are perhaps several hundred kinds of typewriter ribbons available. The trick is to "field test" them in our offices, and find out how many varieties are needed for different jobs, then standardize company-wide on the purchase and use of a selected number of ribbons that will serve us best. We make sure that the brands and qualities we have selected can be obtained readily by our buyers. This usually means that, in this example, several reliable manufacturers of typewriter ribbons will be represented on our shopping list.

As time goes by we revise our list to recognize other improvements in ribbons or our changing requirements for the job. We save money, time, and storage space by this simplification but open the doors of standardization regularly so that technical improvements can walk in.

This, in brief, is the way we standardize hardware, tools, instruments, wire and cable, poles, potheads, pipes, paints, lumber, glass, fire brick, lamps, furniture, office equipment, insulators, communication equipment, relays—about 30,000 items, all listed in the Standards Catalog. During 1951 we added 916 items to the catalog and dropped 750 that weren't moving or that had become obsolete.

One man, obviously, couldn't set these standards. Under the general supervision of the Standards Committee, 20 subcommittees do the job. They meet as often as necessary and choose the products that will be most effective and economical for everyone. Purchasing and Stores Departments' representatives help their fellow subcommittee members solve the problems involved. The Engineering Laboratory and Research Department lends a hand when necessary. The subcommittees cooperate with national associations such as Edison Electric Institute, American Standards Association, and the American Society for Testing Materials which help manufacturers set standards of design, material, parts, size and performance for their products.

It all fits in, and helps to make Detroit Edison an ever more efficient organization and a progressive force in the industrial life of America.

SOME seven years ago the government looked into the item identification or cataloging operations which were then being conducted in the military and civil agencies. We came up with a "Plan for the Development and Maintenance of a Federal Catalog System." That plan was approved by all agencies concerned and subsequently by the President.

In 1947 a request was made to the Congress for an appropriation to initiate the program, and was denied. In consequence, the military agencies, through the Munitions Board, went ahead in 1947 with the development of the military phase of the program under an agreement between the then Bureau of Federal Supply of the Treasury Department and the Munitions Board. That agreement held until the passage of Public Law 152 (81st Congress), the Federal Property and Administrative Services Act of 1949, which is the Act under which the agreements discussed below were entered into.

During the period from 1947 to 1950, the Bureau of Federal Supply, representing the civil agencies, simply participated in the policy and procedural developments under the program, pending the outcome of legislation establishing the broad Federal program. The Hoover Commission at that time investigated the whole standards situation in the Government, and made a series of recommendations which not only led to a solving of the standardization problem, but simultaneously set up a supply and property management organization which is known as the General Services Administration.

Specifically, the Act made it the responsibility of the Administrator of General Services to establish and maintain a uniform Federal catalog system and to develop, maintain, and make mandatory on all agencies of the Government a series of uniform standard purchase specifications known as Federal Specifications.

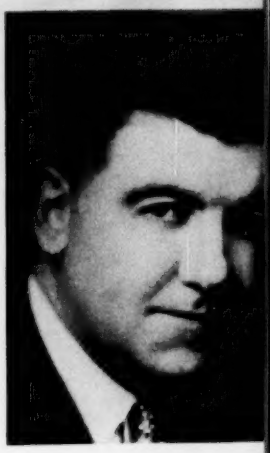
In addition, the Act laid the basis for establishing uniform inspection of materials and testing of materials for acceptance—a very important phase of the Federal standards operation. So, in effect, the Administrator of General Services was given over-all responsibility in the whole area of standardization without regard to the type of item.

There is a provision in P.L. 152 that the Secretary of Defense may exempt himself from any action by the Administrator, if it is found that the proposed action is not in the interests of national security or the defense program. However, on passage of the Act, the President directed that no exemption should be taken by the Military, but that forthwith the Secretary of Defense, the Administrator of General Services, and the Director of the Budget should enter areas of understanding as to the degree in which exemptions should be taken.

In consequence, work was begun on these very difficult problems of standardization, and methods were devised as to how a uniform job of developing specifications, standards, inspection procedures and policies, and the Federal catalog program might be undertaken in order to comply with the Areas of Understanding requested by the President, referred to in the preceding paragraph. The first of these—and I believe the first agreement under the directive—was the one on the Federal Catalog System which was entered into in July, 1950. That agreement, in effect, delegates to the Secretary of Defense, who in turn redelegates to the Munitions Board, responsibility for the development of the Federal Catalog System.

Actually there was little choice on the part of the Administrator of General Services as to how this job would be done, because you will recall the military cataloging program had been under way since 1948. Large sums of money had been spent and a very adequate organization developed. Logic indicated that we should certainly take advantage of the work the military departments had done, and coordinate with the cataloging by civil agencies so that duplicative work would be avoided.

The delegation sets up the basis on which the military departments



can go forward with the technical aspects of the job—the description of solely military items, and those used in common by military and civil agencies. We in General Services represent the entire civil area insofar as civil items of supply, as well as those used in common by military and civil agencies, are concerned.

I think it is significant to note that we have been able to correlate the joint activity to emphasize the military supply problem, and at the same time bring into the process the individual, solely civil items of supply, so that the resultant catalog system can be used effectively by all military and civil agencies.

We are working very closely with the Military at the operating and policy levels, through two joint working groups, and we each have our respective coordinating staffs, the Munitions Board Cataloging Agency on the military side, and GSA on the civil agency side. To date, approximately 1,700,000 items have been identified in the Federal Catalog System. The schedule calls for completion of 2,500,000 items by July 30, 1952. Indications are this schedule will be met.

For the civil agencies we have not been quite so successful because of the lack of funds and staff to do the work, but at least we will have developed by June 30, 1952, many of the descriptions of items used by both civil and military agencies, and

The Government's New Policy on Standards . . .

by Willis S. MacLeod
Director, Standards Agency, General Services Administration

This paper was presented at the meeting of the Standards Council, American Standards Association, April 18, 1952

a substantial number of items used solely by civil agencies. Maintenance of the system will occur in 1953 or shortly thereafter in the military departments, and in 1954 or '55 in the civil agencies.

In times of international stress, appropriations for any program except a strictly military one are difficult to secure. This is true even though such funds will be used in a program coordinated with the military departments, and one in which the entire cost will be recovered in the first full year of operation. We hope that the Senate will take a realistic approach to the cataloging requirements of civil agencies, and will recognize that, unless adequate funds are provided, Government supply management operations will revert to the expensive and inefficient practices which have been so justifiably criticized.

How does this affect ASA and the industrial supplier? Briefly, the cataloging operation must be very significant to you, if you pause to think of the effect on your ability to supply the government and the effect on the development of your production standards, if you are able to know precisely the uniform items being used for military combat, and for joint military and civil use.

There are about 3,750,000 items in supply systems of military and civil agencies, for which there are now 17 or more identifications, names, descriptions, and numbers for the same item. Of those, I think it is safe to say about 1,000,000 are used commonly by all agencies of the Federal Government and our experience so far indicates that to be a reasonable estimate. About half a million are solely civil and the balance of about 2,250,000 are solely military.

We are starting to make available item identification information in pamphlets and on cards. I hope very much that it will not be too long before you will be able to see and feel some of this work and recognize how it might help to expedite your negotiations with Federal agencies.

From our viewpoint the Area of Understanding on Standards is perhaps more far-reaching than the one on cataloging. Before you can really do an effective standardization job, you must know what you have in the present supply systems. Catalog operations simply identify what we have and the possibility of axiomatic elimination of duplicates. Substantial numbers of duplicate items are being eliminated by means of the cataloging operation.

The Federal Government is presently dealing with as many as 7,000,000 items, taking duplications into consideration. Some estimates have been as high as 12,000,000. It is estimated that in the civil agencies alone they now have identities totaling, accumulatively, 3,200,000 items. And that's only for a small part of the national expenditure for material, supplies, and equipment.

Now, in the Area of Understanding on Standards something is being done which we have been trying to do for some 30 years. I think it is the most significant step ever taken by the Federal Government in the standardization field. It sets up the basis for an active joint military-civil standardization program. That program will involve, not only the unification of specifications and standards—I use those two words to differentiate between the engineering type of document as a standard, and the specification as a purchase document—but also packaging and packing, and utilization of inspection and testing services to avoid duplicative inspection and duplicative laboratory testing facilities in agencies. The program also provides for the conversion to Federal Specifications of military specifications which cover common items.

Bear in mind, we have only about 2600 specifications available in the so-called Federal series. We have perhaps 13,000 specifications in the three military establishments which will have to be converted into either Military or Federal specifications. It is safe to say that many of the latter cover common items that all agencies deal with. The program has already provided for common indexes of specifications and standards, the lack of which has caused a great deal of trouble, and better distribution systems, so that specifications can be

more readily obtained both from the military and civil agencies.

We have also inaugurated the practice of establishing approved lists of suppliers who qualify under the specifications. These largely are applicable to items on which performance requirements cannot be adequately established in the specifications or standards. Therefore, it is necessary to go a step further and take some rather exhaustive steps or practical application tests, to determine whether the products comply or not.

Here again it is interesting to note that we are commencing to exchange such lists between the military and the civil agencies; this being a degree of uniformity that has not existed in the past.

We have prepared a very extensive Directory of Inspection and Testing Services, and are maintaining it up-to-date in order to generate greater coordination and avoidance of duplication. We are planning to enforce the mandatory use of Federal Specifications by setting up a system whereby exceptions taken are justified and not capricious.

All of this operation under the Area of Understanding on Standards is bound into a system of priority, a system of determining whether it is important enough to have a Federal Specification. It is a means also of avoiding Federal Specifications for comparatively unimportant items. For example, I am sure many of you have wondered why there has been a Federal Specification for pencils and other items of small unit value. Frankly, we have been powerless up to this time to stop that sort of thing, because of the regulatory aspects of government buying. However, under this plan and the policies it establishes, the Administrator of General Services has the authority to decide when specifications are justified and when not. In the latter cases we can then set up a purchase description or reference a "brand name . . . or equal," and set up the administrative methods to control such a system in a competitive buying operation.

One of the important elements of this plan is the agreement that we would introduce interim or tentative specifications to expedite the process. The average turnaround on Federal Specifications from the start of preparation to their issue has been approximately two years. That is too long. Under the interim procedure a tentative specification can be developed for trial use and then, in the course of a 12-months' period, developed to the degree that it can be promulgated as an approved Federal Specification. The Military have agreed also to adopt the same plan.

Therefore, we can revise and amend specifications much more promptly and at the same time get very quick turnaround. As a part of that process, in lieu of the committee type of operation for preparation of specifications, which at best is a long-range developmental operation, and largely voluntary on the part of Government agencies, there will be assigned to the agencies having the largest staffs and the greatest interests in the material, the responsibility for drafting the initial Interim Federal Specification. The effectiveness of this approach is demonstrated by the fact that recently we produced a complete revision, and a very complicated one, on automotive vehicle tires in 48 hours, and still had a high degree of industry participation and agency advice on it. The industry representatives sat down with us and as a working team we agreed on the revisions that should be included. We then consulted the key agencies who used the most tires to determine the accuracy of the revision. Within 48 hours, a specification was prepared and mimeographed ready for use.

Now, in this process, of course, the Federal Specifications Board and its technical committees will be gradually discontinued. Committees will be retained in many areas as consulting groups and brought together as problems arise.

Of importance to the Standards Council and to our industry contact is the fact that, for the first time to my knowledge, there is official recognition, supported by statute, that nationally recognized standards and specifications shall be used. Some of you know of the problems that have arisen in the past because of the lack of specific authority to do this. We have done a great deal, but without official recognition. Under this Area of Understanding Agreement you will note that the use of nationally recognized industry and technical society standards is mandatory. Item 9 on page 4 reads: "Nationally recognized industry and technical societies standards and specifications shall be used to the maximum extent practicable in the development of Federal and Military Specifications and Standards. Normally, this will be done by adopting by reference or by transcription from such industry and technical society standards or portions thereof, and issuing the result as coordinated or Interim Federal or Military Specifications or Standards, without deviation . . ."

An analysis was made which showed there were 210 existing American Standards that could possibly be utilized in this fashion, and to date we have been thus operating. The agreement was signed last November, but we jumped the gun a little and to date have adopted 45 American Standards, largely in the field of phototgraphic supplies. Certainly the Government buys large quantities of photographic supplies. Consequently, this represents a tremendous advance on both sides. Your committee has been most helpful in enabling us to develop the specifications by utilizing the photographic standards which, I am told, are splendid, and represent a considerable standardization over the items which had been used under the preceding specifications.

Another element of the agreement deals with the participation by Government agencies with "approved industry groups." This sets a mandatory requirement, in terms of policy, that the Government will participate and work with approved industry groups. We are not doing the job we should be doing in that area but we are trying. At best we make many contacts with individual buy-

(*Continued on page* 190)

Government of India Information Services, New York

National Physical Laboratory, New Delhi, India

The Far East at the Crossroads

The status of standardization and its relation to industrial development, as observed by Cyril Ainsworth, ASA Technical Director, in his trip around the world

THE experience of American industry in regulating itself in such fields as accident prevention and standardization can be a valuable help to countries such as India, which are developing new industrial programs. This was the comment of Cyril Ainsworth, Technical Director of the American Standards Association, on his return from a six-weeks trip to the Far East.

Mr Ainsworth was one of the lecturers at a seminar on labor law administration, factory inspection, and accident prevention held in Calcutta, India, under the auspices of the International Labor Organization, February 2-23. He spoke on industrial safety. Dr Harry Heimann, U.S. Public Health Service, lectured on occupational diseases. Other lecturers included the Deputy Chief Inspector of Factories of the United Kingdom, the Chief Safety Advisor of the Indian Ministry of Labor, and the representatives of the International Labor Office's Conditions of Work Division. In addition to the lectures, the seminar included discussions and visits to industrial plants.

Seven Asian countries—India, Ceylon, Malaya, Singapore, Indonesia, Viet Nam, and the Philippines—sent representatives. These countries are faced with a choice of policies in developing their new industries, Mr Ainsworth reported. They are being called on to decide whether industry can proceed under voluntary regulation or whether it should operate under government regulation.

Mr Ainsworth foresees the possibility that labor laws in India will be enforced more strictly as India progresses with its industrial program. American business has a role to play in making available to the Far Eastern countries the experience gained in the United States in voluntary accident prevention, he declares. The fact that industrial safety programs contribute to the welfare of the people from a humanitarian point of view is of special interest in these countries, he believes.

In addition to participation in the seminar, Mr Ainsworth visited the British Standards Institution, the Indian Standards Institution, the Standards Association of Australia, and the New Zealand Standards Institute. He also had an opportunity to meet with the Assistant Director of the Pakistan Standards Institution for

Government of India Information Services, Washington, D. C.

Printing ink is being produced in a plant set up at the National Physical Laboratory, New Delhi, as first experimental semi-scale production resulting from research under the auspices of the Council of Scientific and Industrial Research. The project uses raw materials found in India. Here, worker pours ink from experimental edge runner where ingredients are first mixed into master mill.

Australian News and Information Bureau

Aerial view of steelworks of Broken Hill Pty Co Ltd, Newcastle, Australia.

an hour's discussion.

During this discussion, Mr Ainsworth was informed of the progress being made in completing the organization of the institution; the first Pakistan national standard remains to be developed, he found. "However," he comments, "The Far East countries have learned one lesson fast—that standardization can be an important pre-planning tool and not simply a solution of a recurring difficulty."

Mr Ainsworth spent three days in Delhi with the Indian Standards Institution. While there, he attended the meeting of the Indian sectional committee on mica, at which the Indian point of view was being developed for presentation at the ISO technical committee meeting in New York in June.

He also met with the entire technical staff of the Institution and exchanged views on staff operations, administrative problems, cooperative relations, and general problems. "ISI has assembled a highly intelligent and technically competent staff," Mr Ainsworth comments. Dr Lal Verman, Director of the ISI, is a graduate of several American universities. He has traveled extensively in this country and has twice visited the American Standards Association to study ASA operations.

In India, Mr Ainsworth visited the Minister of Commerce and Industry, who serves as President ex-officio of ISI; and had an opportunity to meet with a member of the Federal Government Planning Board. This Board is operating the five-year plan for the industrial, economic, and social development of India, which includes a five-year standardization program.

In addition, Mr Ainsworth visited the Sugar Research Institute, the Aeronautical Research Institute, and the National Physical Laboratory and conversed with officials in regard to the relation of research to standardization and industrial development. The National Physical Laboratory, for example, after conducting research on the possibility of using local graphite in the manufacture of electrical carbon products, set up a pilot plant and today is producing all the carbon brushes and carbon rods that can be used by the electrical industries of India. After two years it is expected that the plant will be turned over to an Indian manufacturing company which is to be organized.

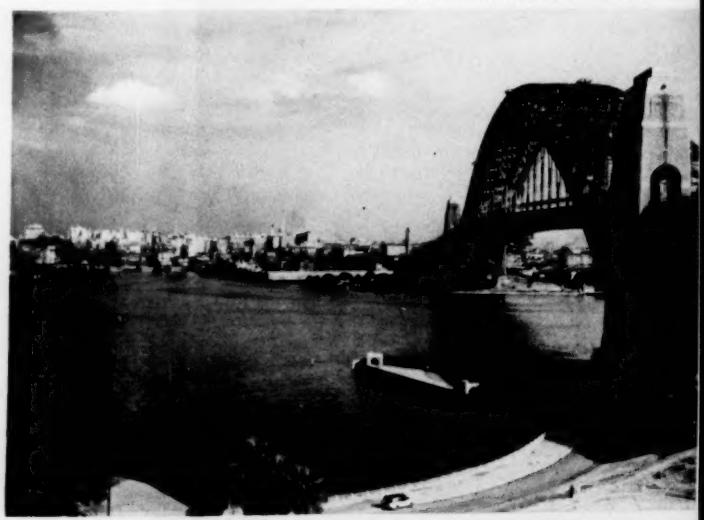
The Indian Standards Institution has invited American companies to become members and participate in its work. It reports, however, that little interest has been shown in this invitation by the local representatives of American companies.

"One who looks beneath the surface, who takes the trouble to enquire and to study the institutions, ideals, customs, government operations, the leaders and their leadership, cannot help but get the impression of a country of tremendous possibilities commercially, economically, and socially," Mr Ainsworth comments. "There are possibilities for good or for evil and their direction can be largely influenced by foreign associations during these early years of the building of the Indian republic."

In Australia, Mr Ainsworth spent

Below, Sydney Harbor bridge has a single span of 1,650 feet and carries two railway and two tramway tracks, six lanes for road traffic, and a footpath.

Australian News and Information Bureau



two days in Sydney with the Standards Association. He attended a luncheon meeting of the Council during which he explained ASA methods and operations, and compared experiences and views with the members.

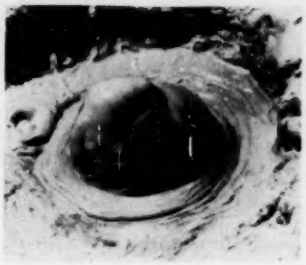
In a visit to the plant of the Australian Iron and Steel Company, he found that the entire plant operation and physical layout conformed so completely to American practice that, he says, "It was hard to realize I was in a country 10,000 miles away from home." This company is a strong supporter of the Standards Association financially as well as technically.

The technical staff of the standards association has been assembled on a high plane of technical competence and experience. Because Australia is such a large country the standards association has found it necessary to establish branch offices in several of the principal cities. This has presented some administrative difficulties, he found, but it also results in broader contacts and wider participation in the technical work.

At Auckland, New Zealand, the chairman of the Standards Council of the New Zealand Standards Institute and its Executive Officer met Mr Ainsworth. He was welcomed by the District Officer of the Department of Industries and Commerce of the New Zealand Government and had an interview with the U.S. Consul General. This American official is very much interested in standards as an aid to foreign trade, Mr Ainsworth declares.

A meeting with members of the Council of the Institute and with a number of industrialists at the home of the District Officer of the Industries and Commerce Department resulted in a discussion of the question whether a national standards body should be autonomous or whether it should be a government agency.

The one break Mr Ainsworth experienced during the strenuous six weeks he was away was an automobile trip from Auckland to Wellington. One of the main points of interest was the thermal region of Rotorua and Wairakie, where there is a



constant display of geysers of water and steam. One steam "geyser," in constant operation, emits steam that is perfectly dry, at a temperature of 380 F, issuing from the ground at 185 pounds per square inch. Holes are being drilled to tap the steam reservoirs with the idea of using the steam as a source of power and heat exchange. One heat exchange unit is now in operation, Mr Ainsworth reports.

The two days spent at Wellington were a constant round of meetings and conferences at which the subject of government operation of standardization was continually arising. The activities included a reception by the technical staff of the Standards Institute; conferences with the Minister of Industry and Commerce; a Ministerial tea reception at the Parliament buildings, with the Minister of Industry and Commerce and the Minister of Labor acting as hosts; a meeting of the Standards Council of the Standards Institute; and a public meeting which Mr Ainsworth addressed on the subject "Standardization—An Avenue for International Good Will." In addition, he met with the Industrial Safety and Hygiene Sectional Committee of the Institute, which is responsible for the development of safety codes, and met with the Workmen's Compensation Board to discuss the development of a national safety program for New Zealand.

At Honolulu, on his way back to the United States, Mr Ainsworth addressed the Governor's Safety Conference for the Island of Oahu.

"One cannot make a trip of this kind without realizing that standardization is not a matter of exclusive interest to USA," Mr Ainsworth

New Zealand National Publicity Studios

New Zealand is tapping its natural steam reservoirs of Rotorua and Wairakei as a source of power and heat. Above, the so-called "champagne" pool (upper background) in the Wairakei Thermal Valley; in foreground are alum and soda pools. (Above, left)—A close-up of boiling mud at Whekarewarewa, Rotorua.

commented in reporting on his trip. "The countries of the world that are newer in industrial development have seen the role that standardization has played in the industrial progress of other countries, and give indication of using standardization even more extensively for the same purpose. This use will be more productive in a shorter period of time than has been the case in USA, for instance, because of the experience and material available from other countries.

"A trip such as the one I have just concluded provides much evidence that the world economy we read and hear so much about is in the building," he declared.

How the U.S. works in ISO

MEETINGS of 12 technical committees of the International Organization for Standardization in New York in June will give American companies, associations, and societies a first-hand view of the procedures that go into international coordination of national standards. It will also give their opposite numbers from other countries an opportunity to see how standardization works in the United States.

An understanding of the role of different organizations in development of American Standards and in formulation of a U.S. viewpoint on international cooperation is essential to any clear understanding of the part standardization plays in the industrial and economic scene in this country.

The American Standards Association is the U.S. member of the International Organization for Standardization. But it is not the viewpoint of ASA that is presented at a meeting of the international technical committee on textiles, for example. It is the viewpoint of the manufacturers of yarns, the makers of fabrics, the laboratories that test fabrics for shrinkage and lightfastness; similarly, on the subject of ball and roller bearings, ISO/TC 4, it is the viewpoint of the bearing manufacturers, the manufacturers who use the bearings, and other governmental and technical groups.

The American Standards Association furnishes the machinery through which ideas of these organizations can be correlated, agreed upon as American Standard, and presented for discussion by their opposite numbers in other countries.

To understand how this system works, we must consider the nearly 1000 trade associations and technical societies in which divergent viewpoints and interests in every conceivable industry, occupation, producing or using unit are correlated and expressed on a nationwide basis.

Many of these groups have committees that develop standards used by their company and individual members. As a matter of fact, the development of standards in the United States might be likened to an iceberg in the Atlantic Ocean. The 1187 standards of nationwide significance which have been given recognition as "American Standard" represent only the small part that appears on the surface. Hundreds and possibly thousands of standards developed by trade associations and technical societies on behalf of their nationwide membership, and by companies for their own use, form the underlying foundation for those efficient production methods that typify the United States in the eyes of the world.

"American Standards" are developed as a result of the work of these associations, societies, and other cohesive nationally recognized groups. In some cases, American Standards have been developed through the procedure of an organization which includes in its membership a wide variety of groups concerned with the problem. In other cases, technical committees organized by the American Standards Association are "sponsored" by a nationally recognized association, technical society, or governmental body, and the membership of the committee is made up of other groups having an interest in the problem.

The American Society of Mechanical Engineers and the Society of Automotive Engineers, for example, "sponsor" the ASA committee on screw threads. Among the organizations that are members of the committee will be found such groups as the Aircraft Industries Association, the American Hardware Manufacturers Association, the American Society of Tool Engineers, the American Association of Railroads, the Compressed Gas Association, the Industrial Fasteners Institute, and the National Electrical Manufacturers Association.

Not only does an American Standard represent a correlation of viewpoints of the organizations represented on a technical committee, it must also represent a correlation of the viewpoints of the members of these organizations.

For the ASA to have a U.S. viewpoint that can be presented at an international meeting, it must obtain it from the national group that has taken the leadership in that particular subject. That organization must present the standardization problem to the appropriate committee. The individual members of the committee in turn must determine the viewpoint of the organization they represent. These organizations themselves must be certain that their views are in line with those of their members. Thus, as in the case of the iceberg, there is more under the surface than appears above it.

The electrical industry offers an unusually clear picture of how standardization, at the company level, has built mass production industries; at the industry level has contributed to economy and efficiency; and at the national level has extended that efficiency into inter-industry and international relationships.

As related over and over again in STANDARDIZATION, electrical companies such as General Electric, Westinghouse, RCA-Victor Division, Allis-Chalmers, and Wagner Electric Corporation have all set up standards departments through which standards are agreed on to prevent duplication of effort, supplies, and materials, and to encourage interchangeability from department to department and plant to plant. Thousands of dollars annually are saved, and operations speeded through the work of these departments.

On the industry level, these com-

panies are members of the National Electrical Manufacturers Association. NEMA's membership at present numbers 541 companies. The Association's Standards Committee has prepared and issued some 170 NEMA standards. These industry standards are of service to NEMA members in encouraging interchangeability of parts or providing and furnishing guides to help in their manufacturing practices.

This standardization is extended on an inter-industry basis when standard specifications, tests, definitions, and operating guides for electrical equipment are of interest to other groups. The mechanical industry is concerned with the nuts, bolts, and screws used in installing electrical equipment; producers and fabricators of steel and iron are concerned with the specifications and tests for materials required by the electrical industry; the general public is concerned with safety of electrical equipment and with the efficiency with which it operates.

When a standard is of broad interest from a nationwide viewpoint, the procedures of the American Standards Association are called into play. ASA approves an American Standard when it has been shown that all groups with a substantial interest in the standard have had an opportunity to express their opinions and have voted on the question with a sufficient consensus in favor.

In many cases, the flow of goods from one country to another would be facilitated if standard specifications, methods of test, and dimensions in these different countries were similar, or, at least, if they did not conflict. The electrical industry found this out early in its history. It set up the International Electrotechnical Commission to correlate standards in the electrical field from country to country. IEC is now the electrical division of the International Organization for Standardization, but maintains autonomy in its operations. In this case, the United States national committee, made up of representatives of important electrical organizations, works with committees organized under American Standards Association procedure in the electrical field. USNC appoints representatives from different technical groups to represent USA in international discussions, but American Standards developed through sectional committees or through nationally recognized organizations are the basis for the viewpoints they express.

The procedure just described is that of the electrical industry. It is similar in the case of other groups working on nationally recognized standards and on international agreement through the International Organization for Standardization.

One of the committees meeting in New York in June is ISO/TC 39 on Machine Tools. In this case the viewpoint of the United States is expressed by the American Standards Association on instructions of the organizations sponsoring the Sectional Committee on Small Tools and Machine Tool Elements, ASA B5. These sponsoring organizations are the American Society of Mechanical Engineers, the National Machine Tool Builders Association, Society of Automotive Engineers, and the Metal Cutting Tool Institute. They have instructed ASA that the U.S. is interested in being kept informed of the activities of ISO/TC 39. Therefore, ASA has arranged with ISO to be listed as a + (or observing) member of this ISO committee The sponsors are arranging that a number of individuals who are interested will attend the June meeting of ISO/TC 39. Through the chairman of the committee, P. L. Houser, International Harvester Company, chairmen of all technical subcommittees of Committee B5 have been informed of the meeting and invited to attend. These technical subcommittees are working on standards on specific types of tools, such as machine tapers, milling cutters, chucks and chuck jaws, spindle noses, twist drills, and reamers.

A similar procedure has been followed in the case of other committees. Because of the work involved in correlating the viewpoints of the various groups, special committees have been organized in a number of cases to take administrative responsibility for the preparations needed in order to clarify and present the U.S. viewpoint.

What ISO Technical Committees Will Discuss

ISO/TC 1, Screw Threads *(Secretariat: Sveriges Standardiseringskommission, Stockholm)*

This committee is scheduled to take up proposals concerning the ISO basic profile; threads for bolts and nuts with triangular profile, smaller than 6-mm diameter; threads for bolts and nuts with triangular profile, above 25-mm diameter; and pipe threads. National standards bodies of the following countries are participating in this committee's work: Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, India, Israel, Italy, Netherlands, Norway, Poland, Portugal, Roumania, Sweden, Switzerland, United Kingdom, USA, USSR.

ISO/TC 3, Limits and Fits *(Secretariat: Association Française de Normalisation, Paris)*

Subcommittee 1 on Preliminary Work is scheduled to meet in June. It will take up a revision of the ISA system; tolerances on tapers; tolerances on form; dial gages; selective fit; and directives for the study of tolerances and fits recommended by a working group.

Participating in the work of this technical committee are the national standards associations of Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Roumania, Sweden, Switzerland, United Kingdom, USSR.

ISO/TC 4, Ball and Roller Bearings *(Secretariat: Sveriges Standardiseringskommission, Stockholm)*

This project seeks to standardize terminology and definitions of bearings and bearing parts; nominal dimensions and tolerances of ball and roller bearings affecting their assembly with other machine parts; methods of inspection; methods of evaluating load ratings; and dimen-

sions of mounting accessories. A U.S. proposal for standardized taper roller bearings in inch dimensions will be taken up. The Swiss have requested consideration of their standards for a series of new miniature ball bearings for use in clocks.

According to Victor L. Barr, Director of Engineering, Roller Bearing Company of America, who is chairman of Sectional Committee B3 on Ball and Roller Bearings, a considerable degree of international unification in the main dimensions of bearings of many types has already been achieved. As an example of such unification he cited the fact that an American automobile can have new bearings installed in almost any part of Western Europe from parts available at the locality. This dimensional interchangeability has been carried out, he said, despite the use of the metric system in Continental Europe as contrasted with the inch system in use in the United Kingdom and the U.S.

"One of our main problems today," Mr Barr said, "is to standardize dimensions of new types of bearings before the demand for that type arises. The aircraft industry, in particular, is constantly needing new sizes and types. If we fill this demand with special unstandardized types, we will find ourselves with excessive varieties, with all the cost in time and money that such variety brings.

"The answer," he said, "is to lay out the dimensions of bearings series, including those of some bearings not yet made or demanded, in advance of need. The ISO committees will work to this end at the meetings in June."

Two technical subcommittees of ISO Technical Committee 4 will also meet. These are the subcommittee on radial bearings, for which the Swiss Standardization Association has the secretariat, and the subcommittee on taper roller bearings, for which the American Standards Association is the secretariat body.

National standards associations of the following countries are participating in this work: Austria, Czechoslovakia, France, Germany, Italy, Poland, Roumania, Sweden, Switzerland, United Kingdom, USA, USSR.

ISO/TC 7, Iron and Steel *(Secretariat: British Standards Institution, London)*

The delegates will deal specifically with the first draft ISO proposal for tensile testing of steel, and with Working Group proposals concerning the Brinell, Rockwell, and Vickers hardness tests, the Charpy and Izod impact tests, and the Bend test, according to the draft agenda for the meeting.

Countries participating through their national standards associations are: Australia, Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, India, Italy, Netherlands, Norway, Poland, Sweden, Switzerland, United Kingdom, USSR.

It is expected that the United States, through the American Standards Association, will have a delegation in attendance in the status of observer at the June meetings.

ISO/TC 19, Preferred Numbers *(Secretariat: Association Française de Normalisation, Paris)*

The committee is expected to take up consideration of two draft proposals on definition and use of preferred numbers which it has circulated since its first meeting in Paris in 1950. It will also examine a French proposal for nominal linear dimensions in mechanical engineering from 1 to 500 mm.

Participating committee members are the national standards associations of: Austria, Belgium, Brazil, Czechoslovakia, Denmark, Finland, France, Germany, Hungary, India, Italy, Netherlands, Norway, Poland, Portugal, Sweden, Switzerland, United Kingdom, USA, USSR.

ISO/TC 28, Petroleum Products *(Secretariat: American Standards Association, New York)*

The committee will consider proposals for world-wide standardization of methods of measurement, methods of sampling, methods of test, and nomenclature. Specifications for petroleum and petroleum products, including products derived in part from petroleum, and lubricants, are included in the scope of the project but will not be considered at these meetings. It is expected that at the June meetings, the committee will draw up a program of work and hear presentations on standardization procedures used in various countries in this field.

The American delegation is expected to give presentations on the development in this country of knock rating tests, volume correction tables, and measurement and sampling procedures as applied to petroleum products.

Participating in this work are national standards bodies of: Czechoslovakia, Denmark, France, Hungary, Italy, Netherlands, Roumania, Sweden, Switzerland, United Kingdom, USA, USSR.

ISO/TC 36, Cinematography *(Secretariat: American Standards Association, New York)*

This will be the first formal meeting since the committee was organized in 1946. The proposed program of work consists of 40 standardization proposals, ranging from dimensions for 16-tooth, 35-millimeter projection sprockets to methods for determining resolving power of 16-millimeter projector lenses. It includes emulsion and sound record positions in cameras and in projectors; dimensions and locations for sound records and scanning area; location and size of picture apertures in cameras, projectors, and printers; dimensions of raw stock; definition of safety film; and standards relative to projection halls.

Participating committee members are the national standards bodies of: Belgium, Czechoslovakia, France, Germany, Hungary, Italy, Netherlands, Switzerland, United Kingdom, USA, USSR.

ISO/TC 38, Textiles. Subcommittee 2, Shrinkage of Fabrics in Washing *(Secretariat: American Standards Association, New York)* Subcommittee 5, Yarn Testing *(Secretariat: British Standards Institution, London)*

Subcommittee 2 will take up de-

termination of the changes in dimensions, shrinking or stretching, of woven cotton, linen, and mixed cotton and linen fabrics to be expected when the cloth is subjected to commercial or home laundering.

Subcommittee 5 will consider a revised draft proposal for methods of testing yarns.

W. D. Appel, chairman of ASA Committee L23, U.S. committee for ISO/TC 38 on Textiles, has stated that American interest in international textile standardization work is high and participation is unusually heavy. "Textile people," he said, "have come to realize the need for international standardization work in the textile field through first-hand experience. In international trade, neither you nor your customer knows what you're selling unless you have a common yardstick."

ISO Technical Committee 38, Textiles, of which the Yarn Testing and Shrinkage subcommittees are a part, was organized to coordinate and unify the national textile standards of ISO member-bodies in order to provide a common understanding among producers, manufacturers, converters, distributors, and consumers. It is concerned with fabricated textiles of all kinds including fibers, yarns, threads, cords, and fabrics, and with agents, conditions, and auxiliary products required for processing and testing textiles.

The British Standards Institution, which holds the secretariat for Technical Committee 38, has announced that the committee's seven subcommittees are making good progress on tests for tensile strength of fabrics, shrinkage, measurement of cloth, terms and definitions, moisture in textiles, fiber testing, yarn testing, colorfastness testing, and other standardization projects.

National standards bodies of France, Germany, India, Netherlands, Sweden, United Kingdom, USA, USSR are participating in the work of Subcommittee 2; Belgium, Czechoslovakia, France, India, Switzerland, United Kingdom, USA, USSR are participating in Subcommittee 5.

ISO/TC 39, Machine Tools *(Secretariat: Association Française de Normalisation, Paris)*

The work of Working Group 1 on Definitions and Measurements will be taken up. This includes machine tapers; milling machine spindle noses; speeds of machine tools; feeds of machine tools; lathe centers; T-slots; direction of operation of drives; tool holders; assembling of grinding wheels on machines; and noses for lathe spindles.

National standards bodies of Belgium, Czechoslovakia, France, Germany, Hungary, India, Italy, Netherlands, Norway, Poland, Portugal, Sweden, Switzerland, United Kingdom, USSR, are participating.

ISO/TC 50, Lac *(Secretariat: Indian Standards Institution, Delhi)*

Specifications for seedlac and shellac, dealing with definitions of terms and methods of testing, will be discussed.

The committee will try to coordinate producer and consumer points of view on moisture content, methods of sampling, wax content, rosin content, flow tests, color, melting point, and bleaching tests.

Participating are the national standards bodies of Australia, France, India, Netherlands, Poland, United Kingdom, USA.

ISO/TC 56, Mica *(Secretariat:) Indian Standards Institution, Delhi)*

Methods of grading processed mica in accordance with a new set of grade designations for blocks, thins, and condenser films based on metric units will be considered.

The proposed grade designations (termed "sizes," to differentiate them from existing NEMA grades) for book-form and loose-pack splittings are based on existing trade practices in India, world's largest producer of high-quality mica. The grading chart for all processed mica —blocks, thins, condenser film, splittings and scrap—is in centimeters, with grading based on the maximum usable rectangle that may be cut from a fully trimmed specimen.

Minimum side dimensions, total areas, tolerances by weight of the next lower grade, thickness, and percentage of "V"-cut pieces allowed are also taken up in the tentative standard.

Members of the committee are the national standards bodies of Brazil, Czechoslovakia, France,[1] Germany, Hungary, India, United Kingdom, USA.

ISO/TC 73, Marks Indicating Conformity with Standards *(Secretariat: Association Française de Normalisation, Paris)*

At its meeting in October 1951, this committee decided to make a survey of marks now in use by the national standards organizations to identify products conforming to national standards. Proposals to establish an ISO mark to identify ISO publications and products conforming to international agreements are under consideration. It has also been suggested that ISO member-bodies arrange for the protection in their countries of marks used by all national bodies to indicate conformity with national standards in their countries.

In all, seventy-six ISO technical committees are now working on standardization projects in such varied fields as plastics, iron and steel, screw threads, packaging of frozen foods, agricultural machines, textiles and textile machinery, gears, bearings, laboratory glassware, rubber, machine tools, shipbuilding details, couplings, materials handling, fire-fighting equipment, axle heights for machines, and transfusion equipment for medical use.

The United States, through the American Standards Association, holds the secretariat of eight ISO Technical Committees: Test Pressures for the Acceptance of Sanitary Boilers and Unification of Boiler Construction Codes; Copper and Copper Alloys; Petroleum Products; Cinematography; Photography; Plastics; Determination of Viscosity; Material for Pipe Lines and Other Fixed Installations in the Field of the Petroleum Industry (not yet accepted).

The U. S. actively participates in the work of 15 other Technical Committees: Screw Threads; Ball and Roller Bearings; Preferred Numbers; Aircraft; Automobiles; Solid Mineral Fuels.

Those Important Voices

Consumers Play a Big Role in Great Britain, says British Leader—

MOST visitors from other countries come to the American Standards Association to discuss standards used by industry. In March of this year ASA had a visitor from Great Britain to discuss standards as they affect homemakers. Mrs A. W. Wakefield, chairman of the Women's Advisory Committee of the British Standards Institution, spent a week in New York during which she discussed consumer standards with members of the ASA staff as well as with executives of organizations in the consumer field.

As past president and honorary vice-president of the National Council of Women of Great Britain and chairman of the Home Economics Committee of that organization, Mrs Wakefield is able to tap the opinions of women throughout the country. Furthermore, 19 of the foremost national women's organizations of Great Britain are represented on BSI's Women's Advisory Committee. Through it more than two million British women, including such diverse types as University professors and miners' wives, can be given information and their desires translated into action.

In a letter to STANDARDIZATION, Mrs Wakefield has given her views on the consumer standards work.

Mrs Wakefield's Comments on Consumer Standards

The longer I live the more I am impressed with the important role standards play in our lives. Manufacturers in the field of engineering and heavy industries realized this long ago; but it has taken a world war to make the housewife appreciate it. Now we wonder why we didn't think of it before.

In a world of soaring costs it is more than ever important that the housewife shall be able to secure maximum value for her money coupled with minimum standards of quality and performance. This holds true especially in the dress trade. No woman today can afford to buy a garment whose color will not stand washing, or which shrinks to an impossible size. She must be sure, too, that the garment is well cut, with adequate selvages and well-sewn seams. In Britain we have evolved a system of sizing based on body measurements. This system, sponsored by the trade itself, has been well received. The children's sizings are particularly popular, based as they are on the child's height and weight—surely a more sensible basis than that of age alone.

The whole setup of British Standards is voluntary, evolved by the manufacturers themselves, and so well has this system worked that few manufacturers can afford to stay outside it. At the same time, in the last resort it is the consumer who really enforces any standard. This is especially true in the dress trade, and the success of the sizings system depends on the consumer. Now that the "Utility" scheme of clothing (so invaluable during the war) has come to an end, the responsibility for pushing these dress standards has been placed upon my committee. I am certain that the dress trade will cooperate as they have in the past; to the consumer it will be a comfort to know that a garment bearing the BSI mark[1] will conform to reliable standards of quality, measurement, and performance.

Of course our Women's Advisory Committee considers many other standards than those of dress. The construction of mattresses; safeguards for portable appliances, such as electric burners and heaters; the composition of floor coverings such as linoleum; colorfastness of textiles, the amount of shrinkage to be per-

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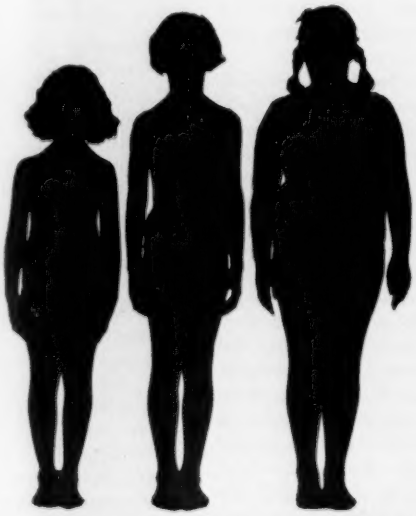


U. S. Bureau of Home Economics

These three girls are eight years old. Differences in body types cause problems for clothing manufacturer as well as user.

[1] The American Standards Association has developed a plan whereby an American Standard Certification Mark is available for use by industry and commerce in this country.

The Language of Color

by Dr David L. MacAdam

Dr MacAdam, Eastman Kodak Company, is chairman of Subcommittee 7 on Color of the ASA Sectional Committee on Optics Z38. This committee is sponsored by the Optical Society of America. Professor Francis W. Sears, Department of Physics, Massachusetts Institute of Technology, is chairman.

IN 1948 the Inter-Society Color Council found that over 1500 color terms were being used by its 15 member societies. Each of these terms was sufficiently important that one or more of the societies supplied a tentative definition. Many of the terms, such as "color," "chromaticity," "luminosity," and "purity," were defined differently by four or more of the societies, and the majority of the terms were defined differently by at least two societies. In many instances, different terms, such as "color," "color stimulus," "color sensation," and "color perception," or "chromaticity diagram," "Maxwell triangle," and "color triangle," were used by different societies for ideas indistinguishable from one another.

This situation had been recognized for many years prior to 1948; numerous attempts have been made to unify and systematize the basic terminology of the field of color. In January of this year an American Standard, Nomenclature and Definitions in the Field of Color, Z58.1.2-1952, was approved by the American Standards Association.

Project Z58, of which this standard is only one part, had its inception in 1940, when Dr Alfred N. Goldsmith, of the Institute of Radio Engineers, asked the Optical Society of America for a glossary of optical and color terms likely to be used in television. The Board of Directors of the Optical Society felt that such terms were needed in so many other industries and sciences that the preparation of the glossary should have a broader base of representation than the Society could provide. In order to obtain suitably widespread and authoritative consideration of optical terms and definitions, the Optical Society suggested that the American Standards Association establish a sectional committee on optics. It suggested that one subcommittee should compile glossaries for the various phases of optics. Although the war delayed the formation of the Sectional Committee Z58 until 1947, the need was so urgent in the field of colorimetry that an American War Standard for the Specification and Description of Color, Z44, was approved by the American Standards Association in 1942. That standard has recently been superseded by a group of standards entitled American Standard Methods for Measuring and Specifying Color, Z58.7.1-1951, Z58.7.2-1951, and Z58.7.3-1951.[1] Nomenclature and definitions were outside the scope of that group of standards; the present standard, Z58.1.2-1952, formally confirms the terminology used in them, however.

The terms and, to a great extent, the definitions in the present standard have already been adopted by the Committee on Colorimetry of the Optical Society of America and are used in a book prepared by that committee, entitled *The Science of Color*, published this spring by the T. Y. Crowell Company. These terms and definitions have also been used as the basis for a glossary of color terms for use in color television, prepared by the Subcommittee on Definitions of the Television Systems Committee of the Institute of Radio Engineers. Thus "the wheel is come full circle" since 1941 and the original request has been fulfilled, not by one society but by collaboration of all of the interested societies, industries, and individuals.

Many interests and points of view had to be consulted and accommodated before this could be accomplished. Consequently, only the terms which have come into general use in practical applications of color measurement have been standardized. The original plan was for the standard on nomenclature to be issued before the standards on methods for measuring and specifying color, which perforce used the terms. The cart appeared before the horse, because there were fewer difficulties in obtaining agreement on methods than on the terms in which the methods are described. In a sense, the present standard on Nomenclature and Definitions in the Field of Colorimetry is a headless horse. The definitions in it use at least one important term, "luminance," which is the subject of a proposed Standard Nomenclature for Radiometry and Photometry. Although this proposed standard was prepared first of all, it has been the subject of the most negotiation, revision, discussion, and compromise, and will appear last of all.

One of the most important accomplishments represented by the new American Standard Nomenclature and Definitions in the Field of Colorimetry is the elimination of terms and meanings which have caused confusion in the past. The first and most important term, "color," denotes the characteristics by which the various kinds of light are visually distinguished. "Color" has often been used to refer to dyes, pigments, stains, and paints; such materials are given the collective name, "col-

(*Continued on page* 190)

NOTE: American Standard Nomenclature and Definitions in the Field of Color, Z58.1.2-1952, is being published in the *Journal of the Optical Society of America*. Individual copies can be ordered from the American Standards Association.

[1] "A Guide for Measurement of Color" by David L. MacAdam, STANDARDIZATION, June 1951, page 176.

Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

621.7 Workshop Practices

FRANCE	**NF**
Roundings, fillets, chamfers	E 22-121
GREAT BRITAIN	**BS**
Coloring and marking wooden pattern equipment for foundries	467:1952
Packaging code, Protection against spoilage	1133:Section 5:1951
Length bars and accessories	1790:1952
Covered electrodes for the metal-arc welding of mild steel	639:1952
Oxy-acetylene welding of high temperature and high pressure pipelines	1821:1952
Filler alloys for brazing (silver solders and brazing solders)	1845:1952
RUMANIA	**STAS**
Welder's gloves	1783

621.87 Hoisting Machinery

AUSTRIA	**ÖNORM**
Crane and winches. General rules for construction	M 9600
FRANCE	**NF**
General safety rules for the installation of electric passenger and freight elevators	P 82-201
GERMANY	**DIN**
Worm conveyor	15261
Graph for working speeds of cranes	15022, B1.1
Belt conveyor for piece materials	15282
5 standards for bucket conveyors	15241-15245
Different types of continuous platform conveyors	15275
Two types of conveyor rollers	15291
Cranes and winches, tables of lifting power, speeds, capacities	15021/2/3
Different types of conveyor buckets	15230
Different types of shapes, rails, etc. for hoisting machines	15311-15313
ISRAEL	**SI**
Regulations for passenger and goods electric elevators	24
RUMANIA	**STAS**
Rules for installation of elevators	1894

625 Technique of Traffic Routes on Land

AUSTRIA	**ÖNORM**
Seven standards for different grade of bituminous binding materials for road building	B 3622 thru B 3628
FRANCE	**NF**
Indicating metal plates for various apparatus, etc	F 00-018
Hand-wheels, handles, nuts for hand brakes	F 11-001/2/3
Fire-box door openings, dimensions	F 20-029
Terminology related to railway cars	F 03-009
GERMANY	**DIN**
Trough tipping wagons for 600-mm track gage. Three types for respective capacities, 75, 1.00 and 1.75 cu in.	5962,5963, 5964
Grease box and outer journal of 1.75 cu in. trough tipping wagon	5972
Coupling hooks for trough tipping wagons for 600 mm rail gage.	5965 B1.1
Trough tipping wagons for 600 mm rail gage, 0.75 cu m and 1.00 cu m capacity	5970/1
POLAND	**PN**
Lens joint seat	K-74052
Pipe collar	K-74059
Cotter pins, flat	K-82074
Trust ring for locomotive valve	K-82180
Guide bar for axle box	K-88048
Grease box clamp	K-88049
RUMANIA	**STAS**
Locomotive, Lens joint seat	1446
Railroad car axles, standard gage. Dimensions	1830
SPAIN	**UNE**
Railroad cars, Nomenclature of parts	25004
Superheaters of locomotive boilers. Details of construction and assembly	25024 thru 25028

629.12 Ships and Shipbuilding

FRANCE	**NF**
24 Standards for Steel Pipings for Ships	
For list, write American Standards Association	
11 Standards for Copper Pipings for Ships	
For list, write American Standards Association	
Series of 25 standards for marine-type pipings:	
Pipe joints, general specifications	J 23-050
General table of pipe joint applications	J 23-060
8 standards for "BP"-type marine joints showing general assembly and details	J 23-100,-101,-110,-112,-140,-145,-150,-155
7 standards for "MP"-type marine joints showing general assembly and details	J23-300,-301,-302,-340,-345,-350,-355
7 standards for "HP"-type marine joints showing general assembly and details	J 23-500,-501,-502,-540,-345,-350,-355
Prismatic glass of the river vessel bridge	J 83-114
GERMANY	**DIN**
Different sizes of shackles and their details	82101,B1.1-4
POLAND	**PN**
Ship-deck hardware: hook, chain, plate, links	W-74014,-89386/7
Turnbuckles	W-83030 thru 83035
Safety type rigging tension eye-bolts	W-83041
RUMANIA	**STAS**
Anchor winch, capacity 2 to 5 ton	1402

628.97 Illumination

GREAT BRITAIN	**BS**
Guide to civil land aerodrome lighting	1332:1952
Street lighting Part I: Traffic routes	CP 1004: part 1:1952

536.51 Thermometers

BELGIUM	**NBN**
Self-recording thermometers used for pasteurization of milk	z. cs.)
FRANCE	**NF**
Glass thermometers for industrial use	B 37-003

637.13 Milk Processing

BELGIUM	**NBN**
Mercury recording thermometer used for milk pasteurization	258
GERMANY	**DIN**
"Tees" and elbows for milk pipe lines	11852
NETHERLANDS	**N**
Determination of density of buttermilk and similar products with a lactodensimeter	1358
Determination of the fat content of buttermilk, etc. by Gerber method	1563
Calculated total percentage of	

dry material in milk	1616
Three types of sampling scoops for butter and cheese	1672/3/4
Determination of fat content in milk by the Gerber method	962
Determination of number of germs in milk	1507

651.316 Miniature Over-current Circuit Breakers

AUSTRALIA	SAA
Approval and test specification for miniature over-current circuit-breakers	C.111-1951 Ap
Approval and test specification for earth leakage circuit-breakers (excluding earth leakage relays)	C.110-1951 Ap

661.8 Inorganic Compounds. Mineral Pigments

BELGIUM	NBN
Minium	249
Ceruse	140

INDIA	IS
Iron sulphate, technical	262
Boric acid, technical	263
Nitric acid	264
Hydrochloric acid	265
Sulphuric acid	266
Specification for superphosphate	294

POLAND	PN
Formic acid, technical	C-83000
Chloroform, technical	C-83007
Tetrachloride, technical	C-83016
Siliceous-potassium alum, technical	C-84009
Sodium mono-sulfide, technical	C-84034
Ammoniacal chrome alum, technical	C-84035
Nitric acid, technical, 96-98 per cent pure	C-84037
Ammonia water	C-84040
Zinc sulphate, technical	C-84043
Sodium fluoride, technical	C-84045
Barium nitrate, technical	C-84050
Acetone, pure, technical	C-97001

SOUTH AFRICA	SABS
Sodium hypochlorite	296-1951

668.48 Turpentine, Fir Oil

AUSTRIA	ÖNORM
Spirit of turpentine and fir oil	C 2301

SPAIN	UNE
Three grades of benzol used as paint and varnish solvents	48004-48006
Tuluol, as solvent for paint and varnish	48007
Xylol, as solvent for paints and varnishes	48008

669 Metallurgy

BELGIUM	NBN
General rules for delivery of metal products	150

DENMARK	DS
Cast steel, not alloyed	15510

FRANCE	NF
Seven standards for sizes and shapes of vignole rails and fishplates, i.e.:	
Type 26Kg	A 45-309
Type 30Kg	A 45-310
Type 36Kg	A 45-311
Type 46Kg	A 45-313
Type 50Kg	A 45-314
Type 52Kg	A 45-315
Type 55Kg	A 45-316

GERMANY	DIN
Certification of material. General	50049
Boiler plates, specifications and properties	17155, Bl.1,2
Seamless steel pipes with guaranteed heat-resistance	17175, Bl.1,2
Tempering steel	17200
Case-hardening steels	17210
Heat-resisting steel casting	17245, Bl.1,2
Aluminum and aluminum alloy bars and strips	1747
Testing of metals. Tension test	50146
Lead	1719
Testing of light metals against corrosion	50907
Aluminum alloy shapes	1748

GREAT BRITAIN	BS
Stainless steel hollow-ware for use in hospital operating theatres and wards	1823:1952
Nickel silver strip and foil for the telecommunication industries	1824:1952
Determination of cadmium in copper-cadmium alloys (electrolytic method)	1825:1952
Steel bars for the production of machined parts	32:1952
Short link wrought iron chain of special quality (excluding pitched or calibrated chain)	1696:1951
Methods for the analysis of aluminum and aluminum alloys	1728:
Part 2: Magnesium	part 2:1952
Nickel clad steel plate	1822:1952
Methods for the analysis of iron and steel—part 23. Manganese in iron and steel absorptionmetric method)	1121: pt 23:1951
Short link wrought iron chain (excluding pitched or calibrated chain)	394:1951
Methods for the analysis of aluminum and aluminum alloys, part 3. Zinc (Mercuric potassium thiocyanate method)	1728: pt 3-1952

INDIA	IS
Galvanized steel sheets, plain and corrugated	277
Galvanized iron and steel wire for telegraph and telephone purpose	279
Copper rods for boiler stays	288

POLAND	PN
Ferro-vanadium, analysis	H-04209
Testing cast iron wedge pieces	H-04675
Testing cast iron fluidity of molten metal	H-04677
Steel scrap	H-15000
Cast iron scrap	H-15100
High speed steel, classification	H-85022
Stainless steel, classification	H-86020
Acid-resisting steel, classification	H-86021
Rolled carbon steel channels. Dimensions	H-93403
Rolled carbon steel window frames, shapes	H-93404
Rolled carbon steel Z-shapes. Dimensions	H-93405
Rolled carbon steel I-shapes	H-93407
Round drawn copper wire	H-93830
Silicon iron, analysis	H-04201
Erichsen stamping test	H-04400
Cast aluminum, classification	H-82160
Round bars, hot-rolled, carbon steel. Dimensions	H-93200
Square bars, hot-rolled, carbon steel. Dimensions	H-93201
Hexagon bars, hot-rolled, carbon steel. Dimensions	H-93203
Flat strips, hot-rolled, carbon steel, for nut stamping	H-93223

SPAIN	UNE
Semi-finished steel products: bars, square, strips	36511/2/3

69.00 Building Practice and Industry

AUSTRIA	ÖNORM
Rules for estimating paint work	B 2229

GREAT BRITAIN	BS
Brickwork	CP 121.101 (1951)
Masonry walls ashlared with natural stone or with cast stone	CP 121.201 (1951)
Flues for domestic appliances burning solid fuel	CP 131.101 (1951)
Asbestos-cement sheet roof coverings	CP 143.201 (1951)
Timber flooring	CP 201 (1951)
Insitu flooring	CP 204 (1951)
Domestic electric water-heating installations	CP 324.202 (1951)
Staff location systems	CP 327.402 (1951)
Electric lifts for passengers, goods, and service	CP 407.101 (1951)

NETHERLANDS	N
Casement doors and windows for different types of—private dwellings	1180 thru 1183

NORWAY	NS
Wooden windows and window-doors. General	759
Constructions, details	760 thru 766
Wooden doors outside and inside. General	770
Standard heights of stories in dwellings	482

POLAND	PN
Code for hoisting machinery for men and materials	M-06500

6977 Heating and Ventilation

BELGIUM	NBN
Rules for noise suppression in heating, ventilation, and air-conditioning installations	263

New IEC Recommendations

THREE recommendations for international coordination of standards in the electrical field have just been given approval, and published by the International Electrotechnical Commission. They cover a color code for fixed resistors, a series of preferred values and their associated tolerances for resistors and capacitors, and international recommendations on dimensions and gages for lamp caps and holders to help in control of interchangeability.

The *Colour Code for Fixed Resistors* (IEC 62) is a revision of a code for marking resistors originally included in IEC Publication 58, *Recommendations for Dimensions, Definitions, and Rules Applicable to Radio Engineering*. The original marking code is no longer in use and has been replaced, in many countries, by another system of coding. In the new color code, both the resistance values and the tolerances are included. For example, a resistor of 27,000 ohms with a tolerance of ± 5 percent would be identified as shown in the figure below. The first band must be the one nearest to one end of the resistor and the bands must be so placed and spaced that there can be no confusion in reading the coding. It is recommended that any additional coding on fixed resistors be so applied as not to confuse the coding for value and tolerance.

The following countries have agreed to publication of this code as an IEC Recommendation: Argentina, Australia, Austria, Belgium, Canada, Czechoslovakia, Denmark, Egypt, Finland, France, Hungary, India, Israel, Italy, Netherlands, Norway, Poland, Portugal, Sweden, Switzerland, United Kingdom, Union of South Africa, United States of America, Union of Soviet Socialist Republics, Yugoslavia.

The *Series of Preferred Values and Their Associated Tolerances for Resistors and Capacitors* (IEC 63) covers capacitors up to 0.1 μF. It represents one of the most urgent items for international standardization, in the opinion of IEC Technical Committee No. 12 on Radio-Communication.

In the committee's opinion it would have been desirable to standardize the $\sqrt[10]{10}$-system but several countries have adopted the $\sqrt[12]{10}$-system and it would have been impractical to change the commercial practice in these countries. Therefore, the $\sqrt[12]{10}$-system was adopted in this international recommendation.

The recommendation provides a series of preferred values with their associated values of tolerances for the resistance of fixed wire-wound resistors and fixed composition resistors, expressed in ohms, and the capacitance of capacitors up to and including 100,000 pF expressed in picofarads.

Twenty-four countries have agreed to publication of this document as an IEC Recommendation.

Through the IEC Recommendation on *Lamp Caps and Holders Together with Gauges for the Control of Interchangeability* (IEC 61) another step is being taken toward bringing about greater interchangeability of electrical equipment throughout the world. The national standards bodies of 25 countries have approved the recommendation for publication. This work was accomplished, first with the active cooperation of the Independent Committee on Standardization of Lamp Caps and Holders (INDECO) until 1939; after the war IEC had the cooperation of experts from countries formerly represented by INDECO with the exception of Germany. A representative from the United States and one from Sweden were also included in this Experts' Preparatory Committee.

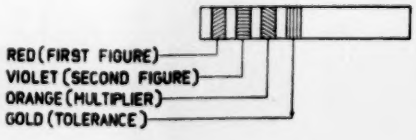
The recommendations give detailed dimensions for lamp caps and holders in general use today for lamps on circuits up to 250 volts, and include gages considered suitable for the control of interchangeability. The gages illustrated are generally accepted in principle, but do not necessarily represent the only form in which suitable gages can be made, it is explained.

In addition, standard international designations are assigned for lamp caps and holders. This restricts the use of descriptive designations, such as "Goliath" screwcap or "Normal" bayonet cap. Instead, it offers a more definite nomenclature which consists of a capital letter indicating the cap construction plus a number indicating the approximate dimensions in millimeters of the cap diameter. For example, in the designation "E40" the "E" stands for "Edison screw" and the "40" for the size "40 millimeters." This designation corresponds to the present description designation "Goliath." Other numbers and letters are added to the designations to indicate additional information as defined in the recommendations.

As an aid to designers and others wishing to specify standard lamp caps and holders, the sheet on which each type of cap or holder is indicated has been given a reference number. This is made up of three numbers separated by a dash. The first number varies according to whether it refers to a sheet in the Cap section, the Holder section, or the Gage section. The second number refers to the type; the third refers to the edition. For example, 7004-21-3 indicates a sheet dealing with a cap, of a type which has been allotted the number 21, in its third edition.

In publishing this recommendation,

(*Continued on page* 188)



Example of color code for resistor of 27,000 ohms with tolerance of ± 5 percent. Numerical significances are provided in a table.

How to Charge Unusual Injuries

AS a help to companies using the American Standard Method of Compiling Industrial Injury Rates, Z16.1-1945, a Committee of Judges appointed by ASA Committee Z16 studies unusual accident cases and advises on how the standard is to be applied. The most recent of these cases are reported below.

Monthly compilation of a company's accident toll shows at a glance when some change in operations or unforeseen new hazard has caused a jump in the injury rate. Thus immediate action can be taken to eliminate the hazard.

Uniform application of the standard is important, therefore, if the injury rate is to be depended on as a guide.

Safety engineers are invited to obtain interpretations of the standard by sending the facts on doubtful cases to the American Standards Association. Reprints of all the published decisions can be obtained from ASA.

CASE 178. A driver of an industrial power truck complained to the plant doctor that his back was bothering him but gave no history of an injury at that time. It seemed that the continuous jolting received in driving his truck finally aggravated his condition to the point that it was necessary for remedial hospital treatment to correct the back condition 6 months later.

At the time of hospitalization the employee gave a history of having slipped off the running board of his truck and wrenched his back. It was found that this story had never been reported to his friends or the men with whom he worked.

Further investigation among this group of men brought out that he had originally wrenched his back while at home playing with his son. In fact, he had been the object of much joking in that he could not hold his own with his small boy.

The committee agreed that this case should be counted. This decision was based on the belief that regardless of the original source of injury, the jolting received while driving the industrial power truck aggravated the back condition, and therefore the case was reportable.

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CASE 179. An employee cut his right palm on a bad piece of glass tube. He received prompt and proper medical attention and did not lose time from work. Medical bills were paid under workmen's compensation.

Nearly a year later the State Industrial Board approved payment of ten weeks' compensation for the following reason: "Ten weeks of compensation for 5 percent permanent partial impairment to the right hand below the elbow." As a basis for the settlement of this case a report from Dr B was used, the original of which was on file with the State Industrial Board, as follows:

"Base of right finger at head of 2nd metacarpal cut by glass.

"There is a painful, tender scar over this scar area. The finger is numb anteriorly and along both sides from this scarred area to the fingertip. Motion of finger is normal but pain and soreness is present on pressure or bumping scar. These conditions have not changed since injury.

"While motion is normal yet pain and numbness is present so that a disability of hand is present which in my opinion is not to exceed 5 percent."

There was a layoff at the plant and the services of this employee were terminated. He had not worked for the company since then. He has taken satisfaction in showing his scar to some of his former associates, remarking how successful he had been in getting the award from the company. The plant felt that since there was no limitation of motion, this case amounted to nothing more serious than a disfigurement, and as such, in accordance with paragraph 3.3.2 (d), should not be classified as a permanent partial disability.

The committee believed that the big question in this case was whether or not Dr B, whose report was given to indicate the extent of disability in this case, was the company doctor or an impartial doctor appointed by the compensation commission. They believed that if Dr B was the company doctor, or if the company agreed with the opinion of Dr B, then this case should be counted as a permanent partial disability, with a time charge of 150 days (5 percent of 3,000 days). If, however, there was disagreement as to the extent of disability, paragraph 3.7 of the standard applied, and the opinion of the doctor engaged or authorized by the company to treat the injury, as to the extent of permanent disability, should apply. For instance, if the company doctor believed that there actually was no permanent disability, the case would not be counted.

•

CASE 180. Employee had been transferred temporarily from his regular job to a job as inspector on a construction project some miles distant from his home. A company-owned vehicle had been assigned to this employee for use in his work as inspector. With the consent of the superintendent in charge of the construction project, the employee had been driving this company-owned vehicle home on week-ends. The employee had received instructions from his supervisor that when he returned on Monday morning he was to pick up another employee at a town near his home and transport him to a location near the construction site. The employee left his home on a Monday morning at about 5:30 A.M. in order to pick up the other employee and be at the construction site by 8:00 A.M. which was the time the workday started. Employee was enroute to get the other employee mentioned above when he crashed the company-owned vehicle into a dirt bank at the end of a dead-end road. The employee was injured in the crash and lost time from work.

The committee decided this case should be counted as an industrial injury. The decision was based on the fact that since the employee had been authorized to use the company-owned vehicle to drive to and from work, and since on the occasion of the accident he had been specifically instructed to make the extra trip necessary to pick up another employee, his driving was in the interest of his employer and the accident which occurred under these circumstances was reportable.

•

CASE 181. An employee started to work 8:30 A.M. At approximately 10 A.M. he went to his supervisor for permission to go to the plant clinic because of personal illness.

When the supervisor reminded him that personal illnesses were treated from 8:30 to 9:30 A.M. and 12:30 to 1:30 P.M., except in emergencies, he stated that his discomfort was not acute enough to warrant his going before 12:30.

A plant physician gave him some medication for a "mild acute gastroenteritis" during the treatment period, and he felt well enough to return to work and complete the day.

At 4:45 P.M., the employee was in the washroom cleaning up preparatory to going home. He complained of dizziness and fell, striking his head on the concrete floor. He did not lose consciousness and after a few minutes rest declared himself able to drive home. He insisted he did not need further medical attention but did accept another employee's offer to drive his car home for him.

He later consulted his own physician because of the gastroenteritis and a persistent headache. X-rays revealed "a linear fracture of the occipital region of the skull with no neurological involvement."

Inspection of the washroom in which the incident occurred revealed that the floor was level and dry and did not have a slippery surface otherwise. No soap or foreign substance contributed to loss of footing and the employee did not strike any projection before or during the fall.

On the basis that the employee's injury resulted directly from his personal illness and occurred during the course of employment merely through coincidence, the employer believed that the injury should not be classified as industrial.

The committee believed this was very definitely a borderline case, and decided that this injury should not be counted in the rates. The committee also stated that

because of the borderline nature of this case, its decision in this instance should not be considered a precedent for other cases that might appear similar in nature.

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CASE 182. A public utility explained that it provided both gas and electrical utility services within its territory. It reported the injuries from its gas service operations to an association of gas companies. It also reported the injuries from its electrical operations to an electrical utility association.

In order to provide efficient services, some of their employees, such as their meter readers, service men, home economists, stock men in the stores department, and garage mechanics, provided both gas and electrical services. One of their home economists had become involved in an automobile accident, losing one day from work. They had also had a meter reader break a leg while descending the stairs to a basement to read both gas and electric meters.

The company provided figures to show the approximate distribution of their business between gas and electrical departments and also the division of their employees between these two groups. The problem was how to properly allocate such lost time accidents between their gas and electrical operations.

The committee agreed there was nothing in the American Standard Method of Compiling Industrial Injury Rates to cover this situation, and therefore the committee could not give the company a definite interpretation. From the members' own experience with injury statistics, both in their own plants and among their associates, it was suggested that it might be practical to pro-rate both the injuries and the man hours of employees who were engaged in combined operations. This would occasionally result in reports of fractions of an injury being charged to a certain department or operation, but they had found no particular difficulty from this method.

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CASE 183. An electrician, carrying out routine electrical work, was squatted down in front of the lower drawer of a filing cabinet in which he kept his tools. He was sorting and cleaning the tools and when he stood up his knee "popped." There was no incident such as a bump or a blow on the knee. The floors were in excellent condition, and there was no water or debris in the vicinity. The man did not slip nor is there any evidence of overexertion or strain or sprain resulting from his being in a crouching position.

There was reported a tenderness and limitation of motion of the left knee; tenderness marked over ligamentons attachment of medial semilunar cartilage. The plant doctor gave no apparent reason for the knee reacting in this manner during what was considered a normal return to a standing position. Injured employee stated he never had any previous trouble whatsoever with his knee, and the plant First Aid records and his physical examination forms bear him out.

It was not believed that this man was working in an unsafe position or posture, and it had been determined that there was no horseplay or anything else that might distract the injured employee at the time he selected to return to a standing position.

The company did not believe that this particular case was similar to Case 15 which had been decided some time ago, because Case 15 had been decided upon the basis of an aggravation of a pre-existing condition under paragraph 2.3. The company also asked as to what paragraph covered this situation if this injury were to be included in the rates.

The committee decided that this injury should be included in the industrial injury rates as a temporary total disability on the basis that this injury arose out of and in the course of employment as described in 2.1 of the standard.

In commenting upon this case, one of the members stated: "The fact that there was no previous physical deficiency is all the more reason, it seems to me, that this injury should be counted. If anything, the existence of a pre-existing physical deficiency might be a factor to cause the case not to be reportable, but the absence of such a condition certainly was not intended to cause an injury not to be reportable."

Standards Council Acts on Policy Question

Walter C. Wagner is Honored at Council's April Meeting

AT its meeting April 18, the Standards Council, in charge of all technical work under the procedure of the American Standards Association, voted to express to Walter C. Wagner, its former chairman, "its sincere appreciation of the efficient way in which he handled the affairs of the Council during his three years as chairman, and of the time and effort which he has devoted, and continues to devote, to its work."

Feature of the meeting was the address by Willis S. MacLeod on government standards and the area of understanding agreement between the General Services Administration and the Department of Defense (see page 166).

The problem presented by manufacturers of rayon and acetate fabrics when they changed from participants to observers in Sectional Committee L22 was analyzed for the benefit of the Council by a Special Committee appointed to study the situation. The manufacturing groups changed their status after subcommittees had completed their technical recommendations but before the sectional committee had voted on the proposed standards.

A. S. Johnson, National Association of Casualty Companies, chairman, reported that the Special Committee had analyzed the problem as follows:

"The issue was simply this—could the Sectional Committee L22 validly function under ASA procedure after the withdrawal of certain manufacturing groups? If it is found to be competent and the standards adopted by it are tested and found satisfactory and a consensus has been reached, the documents should be approved as an American Standard."

The Special Committee found that the sectional committee had been and is now competent, representative, and adequately balanced in accordance with the provisions of ASA procedure; and that a consensus on the approval of the standard had been reached in the sectional committee by its ballot action in which no negative votes had been recorded. The Special Committee found that all the technical and administrative actions were without question at the time the actions to withdraw were taken and that all technical minority opinion had been properly considered and accounted for. There was no recorded objection to the project or to the standards proposed. The groups which changed status from participating members to observers did not vote in the negative, nor did anyone else, the report declared.

The recommendations of the Special Committee were accepted and the standards have been sent to letter ballot of the Council.

AMERICAN STANDARDS

Status as of May 15, 1952

Legend

Standards Council.—Approval by Standards Council is final approval as American Standard; usually requires 4 weeks.

Board of Review.—Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks.

Correlating Committees.—Approve standards to send to Standards Council or Board of Review for final action; approval by correlating committee usually takes 4 weeks.

Building

In Board of Review—

Sand-Lime Building Brick, Specifications for, ASTM C73-51; ASA A78.1 (Revision of ASTM C73-39; ASA A78.1-1942)

In Correlating Committee—

Building Code Requirements for Structural Steel (Riveted, Bolted, or Welded Construction), A57.1 (Revision of A57.1-1943)
Sponsor: American Society of Civil Engineers; American Society of Steel Construction

Excavations and Foundations, A56.1
Sponsor: American Society of Civil Engineers

Non-Slip Oxychloride Composition Flooring and Its Installation, Specification for, A88.5

Terrazzo Oxychloride Composition Flooring and Its Installation, Specification for, A88.6

Industrial Granolithic Oxychloride Composition Flooring and Its Installation, Specification for, A88.7

Oxycement Underlayment and Its Installation, Specification for, A88.8

General Purpose Flooring and Its Installation, Specification for, A88.2 (Revision of A88.2-1951)

Heavy Duty Flooring and Its Installation, Specification for, A88.3 (Revision of A88.3-1951)

Base Coat Flooring and Its Installation, A88.4 (Revision of A88.4-1951)
Sponsors: American Society for Testing Materials; National Bureau of Standards

Seamless Copper Pipe, Standard Sizes, ASTM B42-51; ASA H26.1 (Revision of ASTM B42-49; ASA H26.1-1949)

Seamless Red Brass Pipe, Standard Size, ASTM B43-51; ASA H27.1 (Revision of ASTM B43-49; ASA H27.1-1949)

Seamless Copper Water Tube, ASTM B88-51; H23.1 (Revision of ASTM B88-50; ASA H23.1-1949)

Copper-Silicon Alloy Wire for General Purposes, ASTM B99-51; ASA H30.1 (Revision of ASTM B99-49; ASA H30.1-1949)

Copper and Copper-Base Alloy Forging Rods, Bars, and Shapes, ASTM B124-51; ASA H7.1 (Revision of ASTM B124-49; ASA H7.1-1949)

Brass Wire, ASTM B134-51; ASA H32.1 (Revision of ASTM B134-50; ASA H32.1-1951)

Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes, ASTM B140-51; ASA H33.1 (Revision of ASTM B140-50; ASA H33.1-1951)
Sponsor: American Society for Testing Materials

Chemicals

In Correlating Committee—

Spirit of Turpentine, Specifications for, ASTM D13-51; ASA K32 (Revision of ASTM D13-34; ASA K32-1937)
Sponsor: American Society for Testing Materials

Consumer

American Standards Approved—

Specifications for Chip Soap (Revision of ASTM D496-39; ASA K60.1-1949) ASTM D496-51; ASA K60.1-1952

Specifications for Powdered Soap (Non-alkaline Soap Powder) (Revision of ASTM D498-39; ASA K60.3-1949) ASTM D498-51; ASA K60.3-1952

Specifications for Liquid Toilet Soap (Revision of ASTM D799-45; ASA K60.14-1949) ASTM D799-51; ASA K60.14-1952
Sponsor: American Society for Testing Materials

In Standards Council—

Standards for Rayon Fabrics, L22
Sponsor: National Retail Dry Goods Association

Electrical

In Correlating Committee—

Rated Control Voltages and Their Ranges for Alternating Current Power Circuit Breakers (Revision of C37.8-1945), C37.8
Sponsor: Electrical Standards Committee

Tinned Soft or Annealed Copper Wire for Electrical Purposes (Revision of ASTM B33-50; ASA C7.4-1951) ASTM B33-51; ASA C7.4

Soft Rectangular and Square Bare Wire for Electrical Conductors (Revision of ASTM B48-49; ASA C7.9-1951) ASTM B48-51; ASA C7.9

Rope-Lay-Strained Copper Conductors Having Bunch-Stranded Members for Electrical Conductors (Revision of ASTM B172-50T; ASA C7.12-1951) ASTM B172-51T; ASA C7.12

Rope-Lay-Stranded Copper Conductors Having Concentric and Stranded Members for Electrical Conductors (Revision of ASTM B173-50T; ASA C7.13-1951) ASTM B173-51T; ASA C7.13

Bunch-Stranded Copper Conductors for Electrical Conductors (Revision of ASTM B174-50T; ASA C7.14-1951) ASTM B174-51T; ASA C7.14
Sponsor: American Society for Testing Materials

Horticulture

American Standard Approved—

Nursery Stock, Z60.1-1952 (Revision of Z60.1-1949)
Sponsor: American Association of Nurserymen

Mechanical

American Standards Just Published—

Stainless Steel Pipe, B36.19-1952
Sponsors: American Society of Mechanical Engineers; American Society for Testing Materials

Bearing Mountings for Ball and Roller Bearings, B3.8-1951 $1.00

Bearing Mounting Accessories, B3.9-1951 .50
Sponsor: Mechanical Standards Committee

Round Head Bolts, Carriage, Button Head, Step, and Countersunk Bolts, B18.5-1952 $1.00
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

American Standards Approved—

Ring-Joint Gaskets and Grooves for Steel Pipe Flanges, B16.20-1952
Sponsors: American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors National Assn; Manufacturers Standardization Society of the Valve and Fittings Industry

Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service (Revision of ASTM A194-48; ASA C38.1-1949) ASTM A194-51; ASA C38.1-1952
Sponsor: American Society for Testing Materials

Acme Threads (Revision of B1.5-1945) B1.5-1952

Stub Acme Screw Threads, B1.8-1952
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

In Correlating Committee—

Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.), B32.1 (Revision of B32.1-1941)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Free Cutting Brass Rod and Bar for Use in Screw Machines, ASTM B16-51; H8.1 (Revision of ASTM B16-49; H8.1-1949)
Sponsor: American Society for Testing Materials

Motion Picture

American Standards Just Published—

16-Mm Motion Picture Projection Reels, PH22.11-1952 (Revision of Z22.11-1941,

Z52.33-1945) .35

Splices for 16-Mm Motion Picture Films for Projection PH22.24-1952 (Revision of Z22.24-1941, Z22.25-1941, Z52.20-1944) .25

Splices for 8-Mm Motion Picture Films, PH22.77-1952 .25

Sponsor: Society of Motion Picture and Television Engineers

Photography

In Correlating Committee—

Spectral Densities of Three-Component Subtractive Color Films, PH2

Sponsor: Photographic Standards (Correlating) Committee

Safety

In Correlating Committee—

Safety Code for Mechanical Power-Transmission Apparatus (Revision of B15-1927)

Sponsors: Association of Casualty and Surety Companies, Accident Prevention Department; International Association of Governmental Labor Officials

International Standards For European Aid

In an article published in the *United Nations Bulletin*, the Executive Secretary of the Economic Commission for Europe calls attention to a number of subjects in which the work of the Commission involves international standardization.

Useful work was accomplished recently by the working party studying quality standards for certain perishable foodstuffs.

Arrangements have been made to prepare a pilot machine-tool glossary.

The Transport Committee has adopted recommendations on standardization in packaging for fruits and vegetables, and is making good progress in studies on the standardization of conditions for the transport of perishable foodstuffs.

The Secretariat is investigating the possibilities of establishing an international timber documentation center.

In its report to the Statistical Commission, the Fifth Session of the Subcommission on Statistical Sampling refers to standardization, better knowledge, and specifications of raw materials as prime requisites for the world-wide expansion of mass production and commerce. The Subcommission considers these are in large part statistical in nature. They "present both a challenge and an opportunity for the use of statistical techniques," the Subcommission declares.

Enlarging on this theme, the Subcommission report continues:

"The exchange of manufactured articles, piece parts, assemblies, or of raw materials, between countries or even between manufacturers within the same city, cannot reach the fullest volume and economy without standardization of dimensions and designs and standardization of tests, definitions, and terms. The creation of such standards and specifications is essentially a statistical problem. This is so because the need for standardization raises the question of what qualities and dimensions shall be adopted as standard; and by what rules of sampling and testing it shall be determined whether an article or a batch of articles conforms to the standard. Standardization, if it is to be really effective in promoting commerce, must be closely tied up with the manufacturing and testing of product, both in the laboratory and in service. Moreover, standards are meaningless unless there are economical and reliable ways of determining whether a product conforms to the standard. Modern statistical techniques provide the assurance and economy that are required to meet these problems.

"It should be emphasized here that a first and most important step in national and international standardization is the standardization of the methods of measuring the essential characteristics and quality of a product. Too often differences in the methods of measurement used in different laboratories cause systematic differences in the data obtained, and unless these systematic differences are brought to light and eliminated it will be impossible to reach agreement on meaningful standards for the products. Tests of differences between laboratories and of methods of measurement require proper statistical design and sampling; otherwise the results will be neither economical nor reliable."

New Projects Facilitate Eastern Transportation

The Inland Transport Committee of the Economic Commission for Asia and the Far East is planning a number of projects intended to help in development of better roads and bridges in the Eastern countries. The suggestions of the committee will be made available to the governments of these countries, for adoption with modifications suited to local conditions. The Committee's Work Program includes:

32-01 *Road construction and maintenance;* continuing study and recommendations; next studies to deal with a standardized bridge register, a standard form for recording data concerning concrete pavements, and a standard form for project estimates; and completion of the highway register.

32-05 *Uniform standards of specifications for roads and bridges,* including low cost road. Estimated duration, four years.

32-06 *Uniform road signalization.* Estimated duration, two years.

31-07 *Standardization of specifications for railway materials.* Estimated duration, two years.

33-04 *Uniform craft measurement:* Study of possibility of introduction and use in the ECAFE countries of uniform or comparable methods of measurement of craft. Proposed duration, 1952.

33-06 *Standardization of schedules for preventive maintenance, for various types of marine engines.* Estimated duration, one year.

What's New on American Standard Projects

Safety Code for Elevators, Dumbwaiters, and Escalators, A17—

Sponsors: American Institute of Architects; American Society of Mechanical Engineers; National Bureau of Standards

The sectional committee has completed its work on revision of the sections on Escalators and Private Residence Elevators in American Standard A17.1-1937. It hopes to complete the balance of the revision this year.

Ball and Roller Bearings, B3—

Sponsor: Mechanical Standards Committee

An amendment of the American Standard Gaging Practices for Ball and Roller Bearings, B3.4-1950, is being voted on by the sectional committee. It concerns a change in the table on Radial Internal Clearance Gaging Loads to permit lighter gaging pressure on smaller bearings. The Anti-Friction Bearing Manufacturers Association has made this change in its table on Radial Internal Clearance Measuring Loads. AFBMA explains the reason, as follows: "As many ball bearings for instruments in the Group 0—10 mm (0 in. to $\frac{3}{8}$ in.) are now being used, it has been found that the $2\frac{1}{2}$ kg or $5\frac{1}{2}$ lb gage pressure was too heavy. It has been approved to correct the AFBMA Standard to show $\frac{1}{2}$ kg for these smaller bearings."

Safety Code for Mechanical Refrigeration, B9—

Sponsor: American Society of Refrigerating Engineers

Proposals for revisions to the 1950 edition of this safety code have been prepared by the Interpretations Subcommittee which has been responsible for interpreting provisions of the code since its approval. The proposals have been sent to the sectional committee for its consideration. It is expected that the sectional committee will meet in September to consider the need for a revision of the standard.

Kitchen Utensils and Containers for Mass Feeding, Z64—

Sponsor: National Restaurant Association

Two questionnaires are now before the sectional committee to determine the committee members' preferences on measurements, capacity, and general proportions of large-scale kitchen utensils. The information collected will be used in preparing draft standards. Committee members are being asked to check the measurements which should be used for each type of utensil; whether maximum capacities should be expressed in pounds, gallons, or both; the proportion of height to width; suggestions for changes in sizes now in use; and how much tolerance should be allowed.

When replies are compiled, they will also provide a survey on the kind of material preferred for each type of utensil.

Photographic Films, Plates, and Papers, PH1—

Sponsor: Photographic Standards (Correlating) Committee

At is last meeting the Committee elected its officers for 1952: Paul Arnold, Ansco Division, chairman, and Victor J. Moyes, Eastman Kodak Company, vice-chairman.

Subcommittee PH1-1 on Dimensions of Films and Plates—John G. Mulder, chairman, reported that work on eight standards covering dimensions of aerial film spools and one on aerial roll film, leaders, and trailers is being continued. The subcommittee has held a general conference with people interested in all aspects of aerial film. Proposed revisions of the nine standards were thoroughly discussed by the interested parties represented. General agreement was reached for revision of each standard.

Following the general conference, Subcommittee PH-1 voted to approve the draft standards. A letter ballot of the sectional committee is being taken.

In order to work on revisions of standards covering sheet film and 35-mm camera magazines, the membership of the subcommittee has been enlarged.

This subcommittee is also working on revisions of four American Standards dealing with sheet film dimensions and the standards covering Dimensions for 35-Millimeter Film Magazines for Still Picture Cameras and Dimensions for Molded Type Cores for Photographic Film and Paper Rolls.

It has been suggested that a general conference be called to determine whether or not there is a need for 70-mm film standards in addition to American Standard Dimensions for 70-mm Perforated (and Unperforated) Film, Z38.1.3-1948.

Subcommittee PH1-2, Dimensions of Paper—Victor J. Moyes, Eastman Kodak Company, reported that the subcommittee has prepared proposed revisions of standards on thickness designation of photographic papers.

Further revision of three American Standards for dimensions of sheet and roll papers is now nearing completion.

Subcommittee PH1-3, Other Characteristics—John R. Weber, Photographic Society of America, chairman, called attention to discrepancies between the American Standard Definition of Safety Photographic Film, Z38.3.1-1943, and the American Standard Specifications for Films for Permanent Records, Z38.3.2-1945. Also, this subcommittee had found that the specification for burning rate needed some clarification.

Sound Recording, Z57—

Sponsors: Institute of Radio Engineers; Society of Motion Picture and Television Engineers

Apologies are in order! In the April issue of STANDARDIZATION a news item in the "What's New About Projects" section not only listed this project erroneously as "Z56" but also was entirely "off the beam" in its information about the committee's sponsors. We are pleased to list the correct sponsors in this column—the Institute of Radio Engineers and the Society of Motion Picture and Television Engineers.

This credit is particularly important since the sponsors have reactivated the committee to meet the need for agreement on standards both na-

tionally and internationally. In the international field it will cooperate with the International Radio Consultative Committee's broadcasting study group. Neal McNaughten, engineering director of the National Association of Radio-Television Broadcasters, is chairman of this study group as well as of Committee Z57.

The work program planned by Committee Z57 includes a study of magnetic tape and film and disc recording.

• • **Standards for Navy Reports**—A committee organized by the American Standards Association to make recommendations for standardizing the format of reports prepared for the Navy's Bureau of Ships held its first meeting May 2. This undertaking is part of a larger program for preparation of a manual to serve as a guide for reports prepared by laboratories and shore establishments under the Bureau's supervision. ASA is assisting this program under a contract with the Bureau.

Organizations that have had extensive experience in report writing and are in close touch with the work done by the Navy are represented on the committee. They include the American Council of Commercial Laboratories, the Massachusetts Institute of Technology, General Motors Corporation, General Electric Company, Battelle Memorial Institute, the Library of Congress, the Bell Telephone Laboratories, and the Electrical Testing Laboratories.

The Bureau of Ships' problem arises from the fact that the Bureau has more than 20 laboratories in various sections of the country. The ASA committee is being asked to formulate proposals that may be offered as recommended practices.

This Month's Standards Personality . . .

Dr Frederic Bonnet, pioneer in the development and utilization of rayon, received the Harold De Witt Smith Memorial Medal at the March meeting of ASTM Committee D-13 on Textile Materials. The medal is awarded for outstanding accomplishment in the field of textile fiber science and utilization.

For many years Dr Bonnet was director of the Standards Department, American Viscose Corporation. Since 1946, when he retired, he has been consultant and technical advisor to the president.

Dr Bonnet won nationwide recognition by helping the industry to solve problems connected with handling viscose rayon. He has been an important factor in establishing rayon as the widely accepted fiber it is today.

In addition to his activity in the American Society for Testing Materials, Dr Bonnet has been a Fellow of the American Association for the Advancement of Science since 1906, a member of the American Chemical Society, the American Association of Textile Chemists and Colorists, and the Fiber Society, Inc. He is one of the five Honorary Members of the American Association of Textile Technologists. He served several terms on the Board of Directors of the Textile Research Institute, is a member of that Institute's Research Advisory committee, and was honored in 1949 by being made a Founding Fellow of TRI.

As a member of the Flammability Committee of AATCC, he has been especially active in legislative matters in regard to flammable textiles. He demonstrated to members of the California legislature that the flammability of a fabric depends largely upon its construction.

Dr Bonnet is a member of Committee L22, Rayon Finished Fabrics, representing ASTM and an alternate representing the Rayon Yarn Producers Group on Committee L14, Textile Test Methods. He was a member of the U. S. Delegation to the meetings of ISO/TC38 held at Buxton, England, in 1948.

• • **"Canadian homes** would cost less, and more of them could be built, if architects, contractors, and building material manufacturers could agree on a little thing called modular co-ordination," an article in the *Toronto Globe and Mail*, February 15, 1952, declares. Defining modular co-ordination as the adoption of a standard unit on which construction will be planned, the paper declares that "the stumbling block is the Canadian brick." Around Toronto, it explains, the usual, but not invariable, size is $2\frac{1}{4}$ inches x 4 x 8 inches. In the United States the standard "module" is four inches; the standard brick $2\frac{1}{16}$ inches x $3\frac{1}{2}$ inches x $7\frac{1}{2}$ inches. With mortar, the U.S. brick equals two modules of length, one module of width, and three of them equal two modules of height.

The standard brick is a headache to Toronto contractors, the paper declares, because, "U.S. glazed tile, largely used in finishing, is supplied in modular dimensions for buildings that aren't planned on the modular system."

"The modular system makes it easier to substitute one material for another," the paper coments.

"Under present Canadian practice, if the specified backing material for brickwork is not available, window placement and other architectural features may have to be altered because available material comes in a different size."

"William C. McGolpin, president of the brick and tile manufacturers' association, believes that Canadians will eventually be forced to adopt the modular co-operation theory because

of U.S. competition", according to the *Globe and Mail* story.

The paper reports that one Canadian manufacturer has stocked at least seven sizes of thermopane glass in modular sizes, and would like to maintain its entire stock on the modular basis.

• • **Specifications and standards** on industrial gasoline engines, having 3 to 4 inch bore sizes, will be ready for military procurement about July 1, 1952.

This announcement was made by Russell A. Moody, Director of the Munitions Board Standards Agency of the Department of Defense. It was made in reply to industry requests for several months advance notice on military conversion to use of standardized industrial internal combustion engines developed under the Standards Agency engine standardization project. The project was established to provide interchangeability of parts regardless of engine make. It will encompass automotive, industrial and military-type engines.

• • **A new technical Committee D-23** on Cellulose and Cellulose Derivatives has been organized by the American Society for Testing Materials. Immediate objectives of the group are study and formulation of standard methods of tests, specifications, and definitions of terms. The personnel of the committee will include not only representatives of consumers and producers but of a number of national organizations directly concerned, a number of which have carried out research and related work for some time.

Cellulose and cellulose derivatives have become an important group of materials reaching into the fields of activity of a number of existing ASTM committees, such as the committees on paint, paper, wood, plastics, electrical insulating materials, textiles, and soaps and other detergents, the ASTM explains. These committees have developed standards on cellulose in general but it has been a fringe activity. As a result of conferences among these many interests, including other technical organizations, it was recommended to the ASTM Board of Directors that a new committee be organized which would concentrate and bring together this type of standardization.

Committee D-23 on Cellulose and Cellulose Derivatives will be working in a field in which much research has already been accomplished, not only by other ASTM committees but by such national organizations as American Chemical Society, Technical Association of the Pulp and Paper Industry, Institute of Paper Chemistry, and others. The need for avoiding duplication of effort was stressed in the scope which reads:

"The definitions of terms, and the study and formulation of test methods and specifications covering cellulose for chemical conversion and cellulose derivatives, these activities to be coordinated in cooperation with relevant committees in ASTM and outside organizations."

In addition to authorizing an Executive Subcommittee and a Subcommittee on Definitions and Nomenclature, four other subcommittees were agreed upon covering methods for evaluating cellulose, organic esters, inorganic esters, and ethers. In order to establish the organization of each working subcommittee and to fill their memberships with those who are definitely interested in the particular field, a detailed questionnaire was compiled and distributed to all members on the initial list and to a number of other individuals who might be interested in participating. In order to maintain close correlation with other groups, official representation has been obtained from the several ASTM committees referred to above and from the other national organizations.

The temporary officers of this new ASTM Committee D-23 on Cellulose and Cellulose Derivatives are: F. A. Simmonds, U. S. Forest Products Laboratory, Madison, Wis, Chairman; W. W. Becker, Hercules Powder Co., Wilmington, Del, Secretary.

• • **Progress** in the military magnetic recorder field could be advanced rapidly by coordination of specifications among the services for same-use items and military utilization of the industry's commercial experience, sound recorder manufacturers have told the National Production Authority, Department of Commerce.

NPA informed the initial meeting of the Sound Recorder Manufacturers Industry Advisory Committee that the Munitions Board is interested in working with industries toward developing standard military specifications.

• • **Says Henry J. Taylor** in the booklet, "A Great Opportunity Uncovered," a condensation of three of his recent broadcasts for the General Motors Corporation:

"I find it carefully estimated that total energy generated must be increased from 60 percent to 150 percent horsepower per person within the coming ten years. . . . Says Stalin on page 376 of his book entitled *Leninism:* 'Russia's present technical standards must be replaced by new, higher technical standards. New peoples,' said Stalin, 'new times—new technical standards.' "

• • **The American Medical Association** has just issued the fourth edition of its Standard Nomenclature of Diseases and Operations. Since its inception in 1928, the Standard Nomenclature has become the acceptable system for diagnostic coding of hospital records for more than 70 percent of U. S. hospitals, the *Journal of the American Medical Association* reports in its December 8, 1951, issue.

Rapidly expanding scientific knowledge in many fields has made it necessary to change several sections of the book considerably. The fourth edition has been under way since 1948.

An appendix provides a cross reference of "Standard" code numbers to code numbers of the "International Statistical Classification of Diseases, Injuries, and Causes of Death." This helps to simplify the work of hospitals that participate in or contribute toward large-scale state, national, or world statistical studies of disease. The international list is now accepted on a world basis for statistical analyses by the countries participating in the World Health Organization.

IEC Recommendations

(*Continued from page* 180)

IEC invites the national committees in the various countries to use the international designation in referring to caps and gages; to indicate the number of the IEC standard sheets whenever their national standards refer to them; and to use letter symbols with the same significance as those given in the IEC publication.

Copies of these IEC publications can be obtained from the American Standards Association as follows:

Colour Code for Fixed Resistors, IEC 62	$ .50
Series of Preferred Values and Their Associated Tolerances for Resistors and Capacitors, IEC 63	$ .50
International Recommendations Regarding Lamp Caps and Holders Together with Gauges for the Control of Interchangeability, IEC 61	$2.50

Important Voices

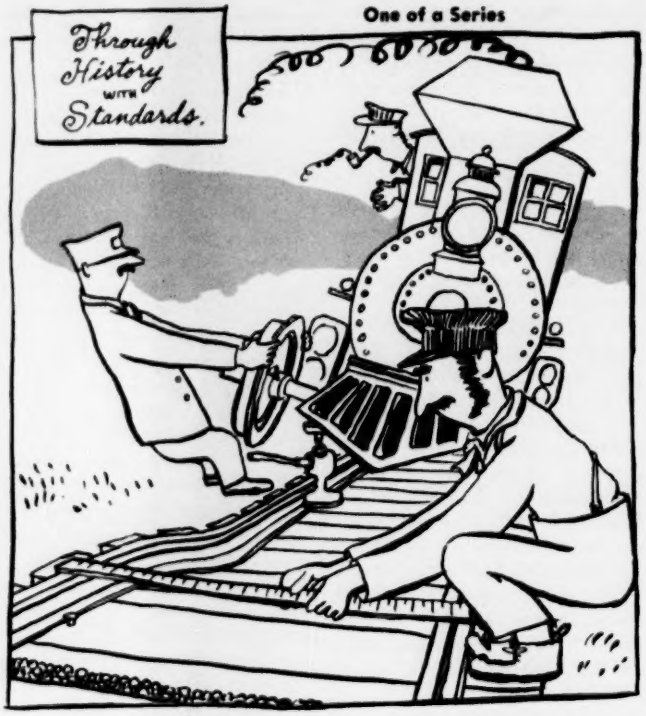
(*Continued from page* 176)

mitted, and other characteristics of fabrics—in fact, anything that concerns the homemaker is our business.

I have been much impressed with the volume and variety of the work of the American Standards Association. Much of your work is similar to ours, and many of your problems are also ours. I hope that you will soon take up this question of the sizing of women's and children's garments and that we may work out some sort of reciprocity. It is greatly to be hoped that the women of your great country will support the work you are doing. In the end the responsibility comes back to the consumer; when enough people demand a thing, they get it.

• • **Proposed changes** in specifications of the armed services to permit greater use of welded steel tubing in place of seamless steel tubing were discussed by the Welded and Seamless Steel Tubing Technical Industry Advisory Committee, which met May 6 with the National Production Authority, U. S. Department of Commerce. NPA was told that present capacity of seamless tube mills is extremely limited, while some manufacturers of electric resistance welded mechanical tubing are booked to less than capacity for May and later months.

One of a Series



How Early American Railroads Gained Interchangeability

Standards engineers agree that probably the most important group standard ever developed in the U. S. was the railroad's standard track gage and system of interchangeable brakes and couplings. These standards make possible the interchangeability of rolling stock among virtually all roads throughout the nation.

Most of the early American railroads had their own gages, the changeover to the present standard gage being made about the time of the Civil War. At one time President Lincoln issued an order that the gate should be five feet. This never became effective, and after many consultations between the roads the present gage of 4 feet 8½ inches became universal.

This standard gage is used in Britain, the U. S., Canada, and most of Continental Europe. India and most of the important railroads in South America use 5 feet 6 inches. South Africa uses 3 feet 6 inches. Australia has never adopted a standard gage, and when cargoes are transferred they have either to be reloaded or special undertrucks have to be used.

• • **The National Bureau of Standards** announces a new Index to the Reports of the National Conference on Weights and Measures, from the First to the Thirty-Sixth, 1905 to 1951. Known as Miscellaneous Publication 203, the 45-page index supersedes Miscellaneous Publication 172. It can be ordered from the Government Printing Office, Washington 25, D.C., at 20 cents.

• • **The Canadian Electrical Association** has made good use of the report "Dollar Savings through Standards." A copy of the report has been sent to each member of the Association's Standardization Coordination Section. In addition, the Association has suggested that the engineering and purchasing departments of all utility and manufacturing companies would benefit by obtaining a copy of this publication from the American Standards Association.

• • **Magazines in the bakery field** have recently featured information on personnel training as an essential element in accident prevention. The material was prepared at the request of ASA Sectional Committee Z50 on Safety in Bakery Equipment as one of a series of articles calling attention to the importance to the bakery industry of American Standard Safety Code for Bakery Equipment, Z50.1-1947. This standard is sponsored by the American Society of Bakery Engineers, which is also backing the work being done to increase the bakery industry's understanding of it. The current article was written by Frank J. Wirken, Director of Personnel and Safety of Interstate Bakeries Corporation.

"Faced with rising costs from every direction, it is reasonable to suggest that this problem of accident prevention be thoroughly analyzed to see whether or not we can minimize accidents," Mr Wirken declares. Accident prevention is no more difficult than consistently producing quality products or keeping a plant in a good sanitary condition, he says. Lack of a program, and the fact that no one person has been assigned responsibility for safety, is the primary reason for failure of most bakery companies to develop a good safety record, in Mr Wirken's opinion.

• • **On recommendation of** the American National Red Cross, the National Research Council, the Department of Defense, and the Public Health Service, a new method of artificial respiration has been endorsed by many outstanding organizations for public use. The method, which is recommended to replace the prone pressure system, is the "back pressure-arm lift" method. A standard technique for administering the method is being prepared by a committee representing the organizations that have endorsed it. These organizations include the Armed Forces, the Federal Civil Defense Administration, the Public Health Service, the Bureau of Mines, the Boy Scouts and Girl Scouts of America, and the American Telephone and Telegraph Company.

Special studies have shown that the "back pressure arm-lift method" is almost as easy to do and to learn as the prone pressure method. It can be carried on for a long time, and even be done by a child upon a heavy person, the *Journal of the American Medical Association* (Dec 8, 1951), reports. It is recommended over the prone pressure method because evidence indicates that the latter gives least ventilation when needed most, the *Journal* reports.

• • **"News Notes"** of the Hotpoint Institute (November-December) advises its readers: "Best buys are kitchen utensils stamped or tagged to show they meet the American Standard. Tell this to homemakers you contact and students you teach. Manufacturers have agreed to provide standard equipment but need assurance that consumers want their utensils made according to requirements set up by the American Standards Association. Let's get consumers—on the demand wagon!"

• • **A-B-C Conference Scheduled** —New impetus is being given to unification of standards of the "A-B-C" countries (America — the United States; Britain — the United Kingdom; and Canada) at a conference being held in New York during the week of June 2. The invitation to the conference was extended by John R. Steelman, Acting Director of Defense Mobilization, and has been accepted by the government organizations concerned and the national standards bodies of all three countries.

Purpose of the conference is to see whether any improvements in existing machinery for reaching agreement on unified standards are desirable and practical. The program initiated at the Ottawa Conference in 1945 will be reviewed. This included plans for screw thread unification which have since resulted in publication in all three countries of approved Unified Screw Thead standards. Progress made since that conference will be noted in redefining the work. It is expected that consideration will be given to the question of placing additional items on the program.

A number of specific subjects are included on the agenda for consideration from a technical viewpoint: Acme threads; buttress threads; pipe threads; threads for gas cylinders; limits and fits; and drawing and drafting room practice.

Because of the importance of the proposed work on drawings, ASA Sectional Committee Y14 on Drawing and Drafting Room Practice is asking the American Society of Mechanical Engineers, as administrative sponsor, to arrange for organization of a Sponsors Council made up of top level industrialists, educators, and military personnel. This group would be responsible for implementing unification at the policy level both in industry and government.

J. R. Townsend, Consultant on the staff of the Director of Defense Mobilization, and Dr E. C. Crittenden, Consultant, National Bureau of Standards, have charge of planning and arranging for the conference. This is being done in cooperation with the American Standards Association and the American Society of Mechanical Engineers, which is furnishing secretarial services for the meetings.

• • **H. S. Osborne,** past chairman of ASA's Standards Council, has been named by J. R. Townsend, Standards Council chairman, to head a committee on English Technical Terminology. This group is to consult with a committee of the British Standards Institution on a proposal for closer coordination of technical terms between the British and Americans. Members of the committee are: C. L. Dawes, Professor, Harvard University, Cambridge, Massachusetts, chairman of ASA Committee on Definitions of Electrical Terms, C42; R. E. Hess, American Society for Testing Materials; F. T. Ward, Hunter Illuminated Car Sign Company, Flushing, N. Y., chairman, ASA Mechanical Standards Committee; Harold Westman, International Telephone and Telegraph Corporation, New York, N. Y., chairman, Drawings and Symbols Correlating Committee.

• • **T. E. Veltfort,** Managing Director, Copper and Brass Research Association, has been re-elected to serve as chairman of ASA's Board of Review for 1952. The board acts on behalf of the Standards Council on questions of initiation and approval of American Standards, except when some question calls for a decision by the Council itself. Other members of the Board of Review are: Virgil M. Graham, Director of Technical Relations, Sylvania Electric Products, Incorporated, Flushing, N. Y.; Harry E. Jordan, Secretary, American Water Works Association, New York; W. P. Kliment, Engineer of Standards, Crane Company, Chicago, Illinois; Harold Massey, Assistant Managing Director, Gas Appliance Manufacturers Association, New York; E. B. Paxton, Standards Division, General Electric Company, Schenectady, New York.

Language of Color

(*Continued from page* 177)

orant," by the new standard. "Color" has also been used as the name for visual sensations or perceptions. Perhaps poetic license will continue to sanction this usage, but fruitless controversy will be avoided if the full terms "color sensation" and "color perception" are used when the discussion concerns those ideas. Finally, "color" has been used in expressions such as "color and chemical constitution" to refer to the locations and relative strength of absorption bands in the visible spectrum and to other spectral characteristics of substances and light sources. It is hoped that misapplications of the term, "color," to subjective experiences, "colorants," and spectral characteristics, will be eliminated by the new standard. This clarification of language should prove to be to the positive advantage of psychology, chemistry, and physics. All of these sciences contribute essentially to colorimetry and stand to benefit from the establishment of colorimetry as an unambiguous tool, applicable in each field without danger of confusion with the terminology proper to each field.

Likewise, "brilliance" and "brightness" have been eliminated from the terminology proper to colorimetry, because they each have inappropriate connotations. "Luminance," which replaces them, has a practically unclouded title to the area in which it is used in colorimetry.

In a similar manner, the subjective connotations with which "chromaticity" has been burdened in the past are explicitly eliminated by the standard definition, thus making it available as a convenient and unambiguous name for a measurable characteristic of color.

The new American Standard, Nomenclature and Definitions in the Field of Colorimetry, is useful not only in color television but also in the dye, pigment, paint, printing, paper, textile, ceramic, photographic, and synthetics industries; in architecture, design, art, and advertising; in psychology, chemistry, physics, mineralogy, and biology; and in all other activities in which color is measured, specified, or described.

New Policy

(*Continued from page* 168)

ers, suppliers' groups, and technical associations and societies.

Now, you will find in this area of industry participation a simple statement which expresses the policy of these three officials of the government:—The Secretary of Defense,

Obituaries

C. Laurence Warwick, 1889-1952—The sudden and tragic death on April 23 of C. Laurence Warwick, Executive Secretary of the American Society for Testing Material, brought to an end a notable career in a field of vital importance in our industrial progress, that of engineering materials.

So unexpected was his death that it happened within an hour after he had presided at a dinner honoring the retiring Treasurer of the Society, J. K. Rittenhouse.

Mr Warwick's connection with ASTM began in 1909 as Assistant Secretary while he was also on the teaching staff of the University of Pennsylvania. He was appointed Secretary-Treasurer (chief executive) in 1919 and Executive Secretary in 1946. He had made numerous contributions to our knowledge of materials, in which field he was a recognized authority, as evidenced by his service during World War II as head of the Materials Division of the War Production Board.

Laurence Warwick was active in civic affairs and in numerous other technical and social organizations. His principal interest, however, was the advancement of objectives of the American Society for Testing Materials—"Promotion of Knowledge of Engineering Materials and the Standardization of Specifications and Methods of Testing." His keen interest in these objectives, his unobtrusive support of constructive activities for their accomplishment, his administrative competence, and the confidence which his personality inspired have been very influential in the attainment of the authoritative reputation enjoyed by ASTM. As a member-body of the American Standards Association, this reputation itself contributes to the basic objective of the Association, the promotion of standardization.

Mr Warwick leaves us at the height of his career, but his contribution to the orderly development of standards in the field of engineering materials will remain with us as a permanent tribute to him.

By F. M. Farmer, President, Electrical Testing Laboratories; past-president, American Society for Testing Materials.

George F. Mitchell, president of the American Gas Association and president of the Peoples Gas Light & Coke Company, Chicago, died suddenly March 26. Mr Mitchell had been one of the gas industry's outstanding leaders for decades. Before his election as AGA president at the Annual Convention in October 1951 he had served as the Association's first vice-president during 1950-51; second vice-president and chairman of the Manufactured Gas Department during 1949-50.

with Mr Small, Chairman of the Munitions Board, as spokesman; Mr Larson, Administrator of General Services, who has the statutory authority; and Mr Lawton, the Director of the Bureau of the Budget. I quote—"The General Services Administration and the Department of Defense shall establish and maintain relationships with approved industry groups as required in order to coordinate the development of specifications, standards, packaging requirements, and inspection procedures with the best practices of industry and to obtain to the greatest extent practicable the cooperation and participation of industry in the program."

Related to this question is the enactment by the Congress of appropriate legislation which will establish once and for all provisions for active participation of Government officials in the activity of the American Standards Association. Presently, there is much confusion in regard to the legal permissibility of participation by Federal officials in the standards developmental work of the Association. It is equally true in respect to the formation of industry advisory groups to assist officials in arriving at technical determinations on standards. In consequence, I feel it would be mutually beneficial to the Government and ASA that the Federal charter for the American Standards Association be enacted. I believe that a charter can be developed which will contain the necessary safeguards on both sides. Such a charter would additionally establish a much-needed collaborative channel between industry and the Government groups in their efforts to arrive at practical standards.

Anything that you gentlemen can do, and many of you have done a great deal, I think, is mutually important to us as standards men to put this kind of a job across. The demands the government is making upon our resources and upon our productive capacities are such that it becomes a real key to your success as general suppliers, in terms of the tremendous impact that these demands of supply make upon you.

Book Reviews

The Heating, Ventilating and Air Conditioning Guide, 1952. (American Society of Heating and Ventilating Engineers, 62 Worth Street, New York 13, N. Y. $7.50)

In this 30th edition, 32 pages of new data have been added in the 1064-page Technical Data Section. This section contains technical and design information on 50 subjects.

In preparing the revised edition, the entire volume was reviewed and important revisions made throughout. The section titles indicate the contents: Fundamentals; Human Reactions; Heating and Cooling Loads; Combustion and Consumption of Fuels; Systems and Equipment; Special Systems; Instruments and Codes.

The enlarged and up-to-date list of codes and standards includes names and addresses of organizations which can supply copies of the documents listed. Extensive reference to American Standards is made throughout.

The enlarged Catalog Data Section contains data and specifications on the latest products of 277 manufacturers whose catalog data is given. A 32-page index to modern equipment lists the names of manufacturers, according to various categories, and gives page numbers on which their catalog data appears. A cross index is provided for both Catalog Data and Technical Data Sections.

Of special importance are the changes and additions that have been made in the chapters on Heat Transmission Coefficients of Building Materials; Heat Transfer; Heating Load; Cooling Load; Industrial Air Conditioning; Air Cleaning; and Refrigeration.

Symposium on Bulk Sampling. (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pennsylvania. 72 pp. $1.75)

In his Introduction to this Symposium, W. E. Deming, Bureau of the Budget, Washington, says "The sampling of bulk materials is one of the most important technical problems in industry. Vast sums of money change hands every day on the basis of samples. A tremendous amount of ingenuity has been put into the problems of sampling. Probably no branch of science has expanded so rapidly and outgrown its shell so many times in the past ten years as the science of sampling."

Purpose of the symposium is to report on problems of sampling materials that occur in bulk form or in packages, with the aim of estimating, at minimum cost, measurable characteristics of a quantity of material in order to get some prescribed limit of error with an assigned probability. These six papers and discussions were sponsored by Task Group 7 on Bulk Sampling, ASTM Committee E-11 on Quality Control of Materials, and were presented at the 1951 Annual Meeting of American Society for Testing Materials.

Proceedings of the Second Technical Session on Bone Char, 1951. (National Bureau of Standards, U. S. Department of Commerce, Washington 25, D. C. $4.00 prepaid. Reprints of section on "Test Procedures" $2.00 prepaid. Order from J. M. Brown, Secretary-Treasurer, Bone Char Research Project, Inc, c/o Revere Sugar Refinery, 333 Medford Street, Charlestown 29, Mass.)

This volume contains the proceedings of the Second Technical Session on Bone Char held at the National Bureau of Standards on May 3 and 4, 1951 under the joint sponsorship of the Bureau and those industries supporting bone char research. Among those attending were representatives of several European and Canadian sponsors.

Four sessions covered test procedures, defecation preliminary to char filtration, filtration operations, and bone char kilns.

The test procedures section, available separately, is expected to form the nucleus of standard methods for testing bone char. Until now lack of uniformity in testing procedures has handicapped the refining industry, the Bureau explains.

1951 Supplement to the ASTM Book of Standards. (American Society for Testing Materials, 1916 Race Street, Philadelphia, Pennsylvania. Complete set $21.00)

With completion of the 1951 Supplement to Part 3 of its *Book of Standards*, ASTM announces that all six 1951 Supplements have been completed. They bring up to date the 1949 Book and the 1950 Supplements. A set of Emergency Alternate Provisions which apply to certain of the standards have also been distributed with the 1951 Supplements.

The Welding of Non Ferrous Metals. By E. G. West. (John Wiley and Sons, Incorporated, 440 Fourth Avenue, New York 16, New York. $8.50)

The first edition of this book by the Technical Director of the Aluminum Development Association of Great Britain discusses the how and why of welding applied to nonferrous metals. Although the welding of steel is well documented, reliable information on welding of many nonferrous materials has been less easy to obtain, Dr West explains. The purpose of the book, therefore, is to place on record basic information on the application of various welding processes to nonferrous materials. Dr West believes that improvements in welding equipment and technique have been in part responsible for the extended use of these materials in many industrial fields. Since the book is by a British author frequent references are made throughout to British Standards.

The book has been written for the welding engineer, operator, instructor and trainee on the one hand, and for the designer, works' engineer, and metallurgist on the other.

The LATEST Standards for Pipe Fittings—

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Malleable-Iron Screwed Fittings

Nonmetallic Gaskets for Pipe Flanges, B16.21-1951. For the first time makes available American Standard sizes for gaskets, giving manufacturer and purchaser a common ground of understanding on types; materials; dimensions; and formulas for determining diameters of gaskets for flanged joints. Covers gaskets for flanges having plain, raised, male, female, and tongue and groove facings. Makes it easy to select proper gasket for desired type of flange, pressure rating, and variety of material.

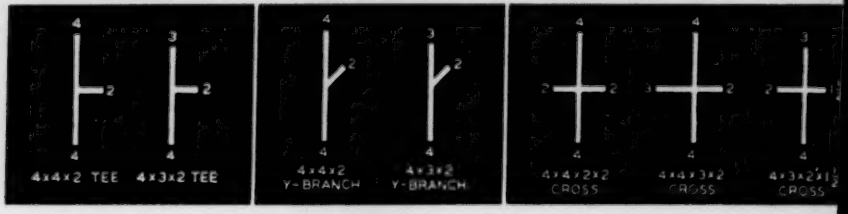
Wrought-Copper and Wrought-Bronze Solder-Joint Fittings, B16.22-1951. Gives data on maximum service pressure and service temperatures that apply to various solders for seamless fittings used with copper water tube. Includes tables of dimensions of soldered-joint ends designed to fit corresponding standard copper water tube. Also includes minimum requirements for material, dimensions and tolerances, and method of designating openings and laying lengths of fittings.

Malleable-Iron Screwed Fittings, 300 Lb, B16.19-1951. Gives pressure ratings, sizes, tolerances, materials, and threading of fittings for use with piping under severe service conditions, such as in the petroleum industry; for oil and gasoline lines; for railroads, ships, and Diesel engines; and for steam.

Malleable-Iron Screwed Fittings, 150 Lb B16.3-1951. This is a companion document to the above, for hydraulic and similar service ratings. This 1951 edition amplifies former provisions on threading, inspection tolerances, and expands the size range of most fittings.

These standards were prepared by ASA Sectional Committee B16 under the sponsorship of the Heating, Piping, and Air Conditioning Contractors National Association, Manufacturers Standardization Society of the Valve and Fittings Industry, and the American Society of Mechanical Engineers.

Figure 1 from American Standard B16.3-1951 showing how size of reducing fittings is read



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Abbreviations

AAR	Association of American Railroads	*FS*	Federal Specification
AATCC	American Association of Textile Chemists and Colorists	*IPCEA*	Insulated Power Cable Engineers Association
AASHO	American Association of State Highway Officials	*IRE*	Institute of Radio Engineers
ACI	American Concrete Institute	*ITE*	Institute of Traffic Engineers
AIA	American Institute of Architects	*JAN*	Joint Army-Navy Specification
AIEE	American Institute of Electrical Engineers	*NBFU*	National Board of Fire Underwriters
API	American Petroleum Institute	*NBS*	National Bureau of Standards
ASRE	American Society of Refrigerating Engineers	*NEMA*	National Electrical Manufacturers Association
ASTM	American Society for Testing Materials	*NFPA*	National Fire Protection Association
BLS	U. S. Bureau of Labor Statistics Bulletin	*R*	Reaffirmed
BMTP	U. S. Bureau of Mines Technical Paper	*RMA*	Radio Manufacturers Association
CS	Commercial Standard	*SPR*	Simplified Practice Recommendation

A star (★) indicates new and revised standards approved since the last (May, 1951) issue of this List

A dagger (†) indicates American Standards published by ASA to which quantity prices apply (see page 31).

A – Civil Engineering and Construction

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		Price
A1.1-1950	Portland Cement, Specifications for (ASTM C150-49)	.25
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A1.4-1950	Compressive Strength of Hydraulic Cement Mortars, Method of Tests for (ASTM C109-49) **Under revision**	
A1.5-1948 R1950	Chemical Analysis of Portland Cement, Methods of (ASTM C114-47; AASHO T105-48 [Part I])	.50
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A2.1-1942	Fire Tests of Building Construction and Materials, Methods of (ASTM E119-41) **Under revision**	
A2.2-1942	Fire Tests of Door Assemblies, Methods of (ASTM E152-41)	.25
A5-1930	**Replaced by A37.73-1951**	
A6-1925	Drain Tile, Specifications for (ASTM C4-24) **Under revision**	
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A21.2-1939	Cast-Iron Pit Cast Pipe for Water or Other Liquids, Specifications for **Under revision**	
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A31-1924	**Replaced by A37.74-1951**	
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A37.8-1947 R1948	Sieve Analysis of Fine and Coarse Aggregates, Method of Test for (ASTM C136-46; AASHO T27-46)	.25
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A37.14-1943 R1948	Sieve Analysis of Mineral Filler, Method of Test for (ASTM D546-41; AASHO T37-42)	.25
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A37.33-1951	★Terms Relating to Materials for Roads and Pavements, Definitions of (ASTM D8-49)	Under revision
A37.34-1948	Materials for Sand-Cement Bed for Brick and Block Pavements, Specifications for (ASTM D58-37)	.25
A37.35-1948	Granite Block for Pavements, Specifications for (ASTM D59-39)	.25
A37.36-1948	Softening Point of Tar Products (Cube-in-Water Method), Method of Test for (ASTM D61-38)	.25
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A37.45-1951	★Distillation of Cut-Back Asphaltic Products, Method of Test for (ASTM D402-49)	.25
A37.46-1948	Centrifuge Moisture Equivalent of Soils, Method of Test for (ASTM D425-39; AASHO T94-42)	.25
A37.47-1948	Field Moisture Equivalent of Soils, Method of Test for (ASTM D426-39; AASHO T93-42)	.25
A37.48-1951	★Asphalt Plank, Specifications for (ASTM D517-50)	.25
A37.49-1948	Preformed Expansion Joint Fillers for Concrete (Non-extruding and Resilient Type), Specifications for (ASTM D544-41; AASHO M58-42)	Under revision
A37.50-1948	Moisture-Density Relations of Soil-Cement Mixtures, Method of Test for (ASTM D558-44; AASHO T134-45)	.25
A37.51-1948	Wetting-and-Drying Test of Compacted Soil-Cement Mixtures, Method of (ASTM D559-44; AASHO T135-45)	.25
A37.52-1948	Freezing-and-Thawing Test of Compacted Soil-Cement Mixtures, Method of (ASTM D560-44; AASHO T136-45)	.25
A37.53-1948	Cut-back Asphalt (Rapid Curing Type), Specifications for (ASTM D597-46; AASHO M81-42)	.25
A37.54-1948	Cut-back Asphalt (Medium Curing Type), Specifications for (ASTM D598-46; AASHO M82-42)	.25
A37.55-1951	★Slow-Setting Emulsified Asphalt (for Fine Aggregate Mixes), Specifications for (ASTM D631-49)	.25
A37.56-1948	Sodium Chloride, Specifications for (ASTM D632-43)	.25
A37.57-1948	Volume Correction Table for Tar and Coal-Tar Pitch (ASTM D633-44)	.25
A37.58-1948	Cement Content of Soil-Cement Mixtures, Method of Test for (ASTM D806-47)	.25
A37.59-1951	★Sulfonation Index of Road Tars, Method of Test for (ASTM D872-48; AASHO T108-48)	.25
A37.60-1948	Cotton Mats for Curing Concrete Pavements, Specifications for (AASHO M73-38)	In press
A37.61-1948	Subgrade Paper, Specifications for (AASHO M74-38)	In press
A37.62-1948	Quality of Water To Be Used in Concrete, Method of Test for (AASHO T16-35)	In press
A37.63-1948	Specific Viscosity (Engler), Method of Test for (AASHO T54-35)	In press
A37.64-1948	Percentage of Bitumen and Bituminous Mixtures, Method of Test for (AASHO T58-37)	In press
A37.65-1948	Flash Point with Tagliabus Open Cup, Method of Test for (AASHO T79-42)	In press
A37.66-1948	Swell Characteristics of Aggregates, Methods of Test for (AASHO T101-42)	In press
A37.67-1948	Spot Test of Asphaltic Materials, Method of Test for (AASHO T102-42)	In press
A37.68-1948	Inorganic Matter or Ash, Method of Test for (AASHO T111-42)	In press
A37.69-1951	★Ready-Mixed Concrete, Specifications for (ASTM C94-48)	.25
A37.70-1951	★Air Content of Freshly Mixed Concrete by the Pressure Method, Method of Test for (ASTM C231-49T)	.25
A37.71-1951	★Specific Gravity of Road Oils, Road Tars, Asphalt Cements, and Soft Tar Pitches, Method of Test for (ASTM D70-27)	.25
A37.72-1951	★Specific Gravity of Asphalts and Tar Pitches Sufficiently Solid To Be Handled in Fragments, Method of Test for (ASTM D71-27)	.25
A37.73-1951	★Toughness of Rock, Method of Test for (ASTM D3-18)	.25
A37.74-1951	★Materials for Cement Grout Filler for Brick and Stone Block Pavements, Specifications for (ASTM D57-20)	.25
A37.75-1951	★Sampling Stone, Slag, Gravel, Sand, and Stone Block for Use as Highway Materials, Methods of (ASTM D75-48)	.25
A38-1933	Steel Reinforcing Spirals (SPR R53-32)	.05
A39-1933	†Window Cleaning	.35
A40.1-1935	Cast-Iron Soil Pipe and Fittings	.80
A40.2-1936	Brass Fittings for Flared Copper Tubes	.50
A40.4-1942	Air Gaps in Plumbing Systems	.55
A40.6-1943	Backflow Preventors in Plumbing Systems	
A40.5-1943	Threaded Cast-Iron Pipe for Drainage, Vent, and Waste Services	.50
A40.7-1949	Plumbing Code	2.50
A41.1-1944	†Masonry, Building Code Requirements for	1.00
A42.1-1950	Gypsum Plastering, Specifications for (AIA 20-A-2)	.60
A42.4-1950	Interior Lathing and Furring, Specifications for (AIA 21-A-2)	
A42.2-1946	Portland Cement Stucco, Specifications for (AIA 21-D)	.50
A42.3-1946	Portland Cement Plastering, Specifications for (AIA 21-A-4)	
A47-1932	Steel Reinforcing Bars (SPR R26-30)	Under revision
A48-1932	†Forms for Concrete Joist Construction Floors	.25
A49.1-1951	★Gypsum, Specifications for (ASTM C22-50)	.25
A49.3-1951	★Gypsum Plasters, Specifications for (ASTM C28-50)	.25
A49.4-1951	★Gypsum Molding Plaster, Specifications for (ASTM C59-50)	.25
A50.1-1939	Billet-Steel Bars for Concrete Reinforcement, Specifications for (ASTM A15-39)	Under revision
A50.2-1936	Rail-Steel Bars for Concrete Reinforcement, Specifications for (ASTM A16-35)	Under revision
A50.3-1936	Cold-Drawn Steel Wire for Concrete Reinforcement, Specifications for (ASTM A82-34; AASHO M32-42)	.25
A53.1-1946	†Light and Ventilation, Building Code Requirements for	.75
A55.1-1948	†Administrative Requirements for Building Codes	.50
A57.1-1943	†Structural Steel (Riveted, Bolted, or Welded Construction), Building Code Requirements for	.75
A58.1-1945	†Minimum Design Loads in Buildings and Other Structures, Building Code Requirements for	.75
A59.1-1945	†Reinforced Gypsum Concrete, Building Code Requirements for	.35
A60.1-1949	†Signs and Outdoor Display Structures, Building Code Requirements for	.50
A62.1-1945	†Coordination of Dimensions of Building Materials and Equipment, Basis for the	.35
A62.2-1945	†Coordination of Masonry, Basis for the	.35
A62.3-1946	†Clay and Concrete Modular Masonry Units, Sizes of	.50
A62.4-1947	†Clay Flue Linings, Sizes of	.35
A66.1-1951	★Keene's Cement, Specifications for (ASTM C61-50)	.25
A67.1-1951	★Gypsum Lath, Specifications for (ASTM C37-50)	.25
A68.1-1951	★Gypsum Sheathing Board, Specifications for (ASTM C79-50)	.25
A69.1-1951	★Gypsum Wall Board, Specifications for (ASTM C36-50)	.25
A70.1-1951	★Testing Gypsum and Gypsum Products, Methods of (ASTM C26-50)	.25
A73.1-1942 R1950	Concrete Masonry Units for Construction for Catch Basins and Manholes, Specifications for (ASTM C139-39)	.25
A74.1-1951	★Structural Clay Load-Bearing Wall Tile, Specifications for (ASTM C34-50)	.25
A75.1-1942 R1950	Concrete Building Brick, Specifications for (ASTM C55-37)	.25
A76.1-1951	★Structural Clay Non-Load-Bearing Tile, Specifications for (ASTM C56-50)	.25
A77.1-1951	★Structural Clay Floor Tile, Specifications for (ASTM C57-50)	.25

NOTE: Minimum charge on any purchase is $0.25.

		Price
A78.1-1942 R1950	Sand-Lime Building Brick, Specifications for (ASTM C73-39)	Under revision
A79.1-1944 R1950	Hollow Load-Bearing Concrete Masonry Units, Specifications for (ASTM C90-44)	.25
A80.1-1942 R1950	Hollow Non-Load-Bearing Concrete Masonry Units, Specifications for (ASTM C129-39)	.25
A81.1-1942 R1949	Solid Load-Bearing Concrete Masonry Units, Specifications for (ASTM C145-40)	.25
A82.1-1951	★Sampling and Testing Brick, Methods of (ASTM C67-50)	.25
A83.1-1942 R1945	Sampling and Testing Structural Clay Tile, Methods of (ASTM C112-36)	.25
A84.1-1942 R1950	Sampling and Testing Concrete Masonry Units, Methods of (ASTM C140-39)	.25
A85-1942	†Protective Lighting for Industrial Properties (American War Standard)	Out of print
A87.1-1947	†Steel Joist Construction, Building Code Requirements for	.35
A88.1-1951	★Preparation of Subfloors to Receive Oxychloride Composition Flooring, Specifications for	Under revision
A88.2-1951	★General Purpose Oxychloride Composition Flooring and Its Installation, Specifications for	Under revision
A88.3-1951	★Heavy Duty Oxychloride Composition Flooring and Its Installation, Specifications for	Under revision
A88.4-1951	★Oxychloride Composition Basecoat Flooring and Its Installation, Specifications for	Under revision
A89.1-1951	★Reinforced Concrete, Building Code Requirements for (ACI 318-51)	.50
A90.1-1949	Manlifts, Safety Code for	.55
A93.1-1948	Indiana Limestone, Specifications for	.50
A94.1-1948	†Interior Marble, Specifications for	.50

B — Mechanical Engineering

(Special price of series, including abbreviation and symbol standards, $75.00)

B1.1-1949	Unified and American Screw Threads for Screws, Bolts, Nuts, and Other Threaded Parts	3.00
B1.2-1951	★Screw Thread Gages and Gaging	4.00
B1.3-1941	Acme and Other Translating Threads	Out of print
B1.4-1945	Screw Threads for High-Strength Bolting	.50
B1.5-1945	†Acme Threads (American War Standard)	.75
B1.6-1944	†Screw Threads of Truncated Whitworth Form (American Truncated Whitworth Threads) (American War Standard)	Withdrawn
B1.7-1949	Nomenclature, Definitions and Letter Symbols for Screw Threads	.50
B2.1-1945	Pipe Threads	1.50
B3.4-1950	†Gaging Practices for Ball and Roller Bearings	.50
B3.5-1951	★†Tolerances for Ball and Roller Bearings	.75
B3.8-1951	★†Bearing Mounting for Ball and Roller Bearings, Specifications for	1.00
B3.9-1951	★†Bearing Mounting Accessories, Specifications for	.50
B4.1-1947	Limits and Fits for Engineering and Manufacturing (Part I)	.50
B5c1-1947	Milling Cutter Teeth, Nomenclature for	.70
B5.1-1949	T-Slots—Their Bolts, Nuts, Tongues and Cutters	.50
B5.3-1950	Milling Cutters, Nomenclature, Principal Dimensions, etc (Revision of B5c-1930)	2.25
B5.4-1948	Taps, Cut and Ground Threads	1.50
B5.5-1932 R1949	Rotating Air Cylinders and Adapters	.50
B5.6-1941 R1949	Jig Bushings	.50
B5.7-1948	Circular and Dovetail Forming Tool Blanks	.75
B5.8-1936	Chucks and Chuck Jaws for Turret Lathes and Automatic Lathes	.55
B5.9-1948	Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes, and Automatic Lathes	.85
B5.10-1943 R1949	Machine Tapers, Self-Holding and Steep Taper Series	.75
B5.11-1937	Adjustable Adapters for Multiple Spindle Drilling Heads	.60
B5.12-1950	Twist Drills, Straight Shank and Taper Shank	.75
B5.14-1949	Reamers	1.50
B5.15-1950	Involute Splines, Side Bearing	2.00
B5.16-1941	Accuracy of Engine Lathes (American Defense, Emergency Standard)	Out of print
B5.17-1949	Markings for Grinding Wheels and Other Bonded Abrasives	.50
B5.18-1943 R1949	Spindle Noses and Arbors for Milling Machines	.50
B5.19-1946	Life Tests of Single-Point Tools Made of Materials Other Than Sintered Carbides	.55
B5.20-1947	Machine Pins	.50
B5.21-1949	Straight Cut-Off Blades for Lathes and Screw Machines	.50
B5.22-1950	Single-Point Tools and Tool Posts (Revision of B5.2-1943 and B5.13-1939)	1.25
B5.25-1950	Punch and Die Sets for Two-Post Punch Press Tools	.75
B5.26-1950	Involute Serrations	1.00
B5.27-1951	★Drill Drivers, Split-Sleeve, Collet-Type	.50
B6.1-1932	Spur Gear Tooth Form	.55
B6.5-1949	Letter Symbols for Gear Engineering	.50
B6.6-1946	Gear Tolerances and Inspection	.80
B6.7-1950	20-Degree Involute Fine-Pitch System for Spur and Helical Gears	1.50
B6.8-1950	Fine-Pitch Straight Bevel Gears	1.00
B6.9-1950	Design for Fine-Pitch Worm Gearing	1.50
B6.10-1950	Gear Nomenclature, Terms, Definitions, and Illustrations	1.50
B6.11-1951	Inspection of Fine Pitch Gears	2.50
B7.1-1947	Use, Care, and Protection of Abrasive Wheels, Safety Code for the	.75
B8-1932	†Protection of Industrial Workers in Foundries, Safety Code for the	.35
B9.1-1950	Mechanical Refrigeration, Safety Code for (ASRE Circular 15-R)	1.00
B11.1-1948	†Power Presses and Foot and Hand Presses, Safety Code for	1.25
B13-1924	Logging and Sawmill Safety Code (NBS Handbook H5)	Out of print
B15-1927	Mechanical Power-Transmission Apparatus, Safety Code for	Under revision
B16b-1944	Cast-Iron Pipe Flanges and Flanged Fittings, Class 250	.55
B16b1-1931 R1947	Cast-Iron Pipe Flanges and Flanged Fittings (for 800 lb Hydraulic Pressure)	.50
B16b2-1931 R1947	Cast-Iron Pipe Flanges and Flanged Fittings (for Maximum WSP of 25 lb)	.50
B16c-1939	Replaced by B16.3-1951	
B16e-1939	Steel Pipe Flanges and Flanged Fittings, including Supplement No. 1, B16e6-1949	1.85
B16g-1929 R1947	Cast-Iron Long Turn Sprinkler Fittings, including Addendum B16g1-1937	Withdrawn
B16.1-1948	Cast-Iron Pipe Flanges and Flanged Fittings, Class 125	.65
B16.3-1951	★Malleable-Iron Screwed Fittings, 150 lb (Revision of B16c-1939)	1.00
B16.4-1949	Cast-Iron Screwed Fittings, 125 and 250 lb (Revision of B16d-1941)	.60
B16.9-1951	★Steel Butt-Welding Fittings	.75
B16.10-1939 R1947	Face - to - Face Dimensions of Ferrous Flanged and Welding End Valves	.65
B16.11-1946	Steel Socket-Welding Fittings	.60
B16.12-1942	Cast-Iron Screwed Drainage Fittings	.55
B16.14-1949	Ferrous Plugs, Bushings and Locknuts with Pipe Threads	.50
B16.15-1947	Brass or Bronze Screwed Fittings, 125 lb	.65
B16.16-1948	Cast-Iron Flanges and Flanged Fittings for Refrigerant Piping, Class 300	.50
B16.17-1949	Brass or Bronze Screwed Fittings, 250 lb	.50
B16.18-1950	Cast Brass Solder-Joint Fittings (Revision of A40.3-1941)	.75
B16.19-1951	★Malleable-Iron Screwed Fittings, 300 lb	.60
B16.21-1951	★Nonmetallic Gaskets for Pipe Flanges	1.00
B16.22-1951	★Wrought Copper and Bronze Solder Joint Fittings	.75
B17c-1927 R1947	Design of Transmission Shafting, Code for	.90
B17f-1930 R1947	Woodruff Keys, Keyslots and Cutters	.50
B17.1-1943	Shafting and Stock Keys	Under revision
B18a-1927	Small Rivets, including Addendum B18a1-1942	Under revision
B18d-1930	Track Bolts and Nuts	Under revision
B18g-1929	Tinners', Coopers' and Belt Rivets, including Addendum B18g1-1942	.50
B18.2-1952	Square and Hexagon Bolts and Nuts	2.00
B18.3-1947	Socket Head Cap Screws and Socket Set Screws	Under revision
B18.4-1950	Large Rivets (½ Inch Nominal Diameter and Larger)	1.00
B18.5-1952	Round Head Bolts	1.00
B18.6-1947	Slotted and Recessed Head Screws, Machine, Cap, Wood, Tapping and Slotted Headless Types	1.00
B18.8-1950	High-Strength High Temperature Internal Wrenching Bolts	.50
B18.9-1950	Plow Bolts (Revision of B18f-1928)	.55
B19-1938	Compressed Air Machinery and Equipment, Safety Code for	.50
B20.1-1947	Conveyors, Cableways and Related Equipment, Safety Code for	.90
B24.1-1952	★†Forging and Hot Metal Stamping, Safety Code for	In press
B26-1925 R1947	Fire-Hose Couplings Screw Thread	.50
B27.1-1950	Lock Washers	.75
B27.2-1949	Plain Washers	.50
B28.1-1949	†Mills and Calenders in the Rubber Industry, Safety Code for	1.00
B29.1-1950	Transmission Roller Chains and Sprocket Teeth	3.00
B29.2-1950	Inverted Tooth (Silent) Chains and Sprocket Teeth	2.00
B30.1-1943	Jacks, Safety Code for	.50
B30.2-1943	Cranes, Derricks, and Hoists, Safety Code for	1.80
B31.1-1951	Code for Pressure Piping	3.50
B32.1-1941	Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 in.)	Under revision
B33.1-1935 R1947	Hose Coupling Screw Threads	.50
B36.1-1950	Welded and Seamless Steel Pipe, Specifications for (ASTM A53-47)	Under revision
B36.2-1950	Welded Wrought-Iron Pipe, Specifications for (ASTM A72-45)	.25

		Price
B36.3-1950	Seamless Carbon-Steel Pipe for High-Temperature Service, Specifications for (ASTM A106-48T) Under revision	
B36.4-1942 R1950	Electric-Fusion-Welded Steel Pipe (sizes 30 in. and over), Specifications for (ASTM A134-42) Under revision	
B36.5-1950	Electric - Resistance - Welded Steel Pipe, Specifications for (ASTM A135-46) Under revision	
B36.9-1950	Electric-Fusion-Welded Steel Pipe (sizes 4 in. to but not including 30 in.), Specifications for (ASTM A139-46) Under revision	
B36.10-1950	Wrought-Steel and Wrought-Iron Pipe	.65
B36.11-1942 R1950	Electric-Fusion-Welded Steel Pipe for High-Temperature and High-Pressure Service, Specifications for (ASTM A155-42) Under revision	
B36.12-1945	Lap-Welded and Seamless Steel and Lap-Welded Iron Boiler Tubes, Specifications for (ASTM A83-44) Under revision	
B36.13-1945	Electric - Resistance - Welded Steel and Open-Hearth Iron Boiler Tubes, Specifications for (ASTM A178-44) Under revision	
B36.14-1945	Seamless Steel Boiler Tubes for High-Pressure Service, Specifications for (ASTM A192-44) Under revision	
B36.15-1945	Medium-Carbon Seamless Steel Boiler and Superheater Tubes, Specifications for (ASTM A210-44) Under revision	
B36.16-1945 R1950	Spiral-Welded Steel or Iron Pipe, Specifications for (ASTM A211-44)	.25
B36.17-1945	Seamless Alloy-Steel Boiler and Superheater Tubes, Specifications for (ASTM A213-44) Under revision	
B36.18-1945	Electric - Resistance - Welded Steel Boiler and Superheater Tubes for High-Pressure Service, Specifications for (ASTM A226-44) Under revision	
B36.19-1949	Stainless Steel Pipe	.50
B36.20-1951	★Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses, Specifications for (ASTM A120-47)	.25
B36.21-1950	Seamless Alloy-Steel Pipe for High-Temperature Service, Specifications for (ASTM A158-49T) Under revision	
B36.22-1950	Seamless Carbon-Molybdenum Alloy-Steel Pipe for High-Temperature Service, Specifications for (ASTM A206-48T) Under revision	
B36.23-1950	Welded Alloyed Open-Hearth Iron Pipe, Specifications for (ASTM A253-47) Under revision	
B36.24-1950	Seamless Chromium-Molybdenum Alloy-Steel Pipe for Service at High Temperatures, Specifications for (ASTM A280-48T) Under revision	
B36.25-1950	Seamless 1 Percent Chromium, 0.5 Percent Molybdenum Alloy-Steel Pipe for Service at High Temperatures, Specifications for (ASTM A335-48T) Under revision	
B36.26-1950	Seamless and Welded Austenitic Stainless Steel Pipe, Specifications for (ASTM A312-48T)	.25
B38.1-1931	Domestic Refrigerators Using Ice, Code for Testing Under revision—Out of print	
B38.1-1944	†Food-Storage Volume and Shelf Area of Automatic Household Refrigerators, Method of Computing	.35
B38.2-1944	††Household Electric Refrigerators (Mechanically Operated), Test Procedures for	.50
B40.1-1939 R1947	Indicating Pressure and Vacuum Gages	.50
B45.1-1932	Foundry Patterns of Wood (CS19-32) Out of print	
B46.1-1947	Surface Roughness, Waviness, and Lay	.50
B46.2-1952	★Surface Roughness and Lay, Physical Specimens of	1.00
B47.1-1941	Gage Blanks (CS8-41) Under revision	
B48.1-1933 R1947	†Inch-Millimeter Conversion for Industrial Use	.50
B49.1-1947	Shaft Couplings, Integrally Forged Flange Type for Hydro-Electric Units	.50
B56.1-1950	Industrial Power Trucks, Safety Code for	.85
B57.1-1950	Compressed Gas Cylinder Valve Outlet and Inlet Connections	1.50
B59.1-1950	Mechanical Refrigeration Installations on Shipboard (ASRE 26)	1.00
B60.1-1950	Refrigerant Expansion Valves, Method of Rating and Testing (ASRE 17-R)	.50
No Symbol	†Tolerances for Cylindrical Fits (A primer—not a standard)	.50

C — Electrical Engineering

(Special price of series, including abbreviation and symbol standards, $35.00)

		Price
C1-1951	National Electrical Code (NBFU 70; 4 x 6¼ in.) (Paper-bound NFPA 70; 4¼ x 7¼ in. $1.00) (Cloth-bound NFPA 70; 6 x 9 in. $3.00)	.10
	C2 National Electrical Safety Code (NBS Handbook H30), $1.75 (also 5 parts sold separately)	
C2.1-1941 R1947	Installation and Maintenance of Electrical Supply Stations, Safety Rules for the (NBS Handbook H31)	.10
C2.2-1941 R1947	Installation and Maintenance of Electric Supply and Communication Lines, Safety Rules for the (NBS Handbook H32)	.75
C2.3-1941 R1947	Installation and Maintenance of Electric Utilization Equipment, Safety Rules for the (NBS Handbook H33)	.20
C2.4-1939 R1947	Operation of Electric Equipment and Lines, Safety Rules for the (NBS Handbook H34)	.20
C2.5-1940 R1947	Radio Installations, Safety Rules for (NBS Handbook H35)	.15
	C5 Protection against Lightning, Code for (NBS Handbook H40):	
C5.1-1937	Part I, Protection of persons	Under revision
C5.2-1937	Part II, Protection of Buildings and Miscellaneous Property	
C5.3-1944	Part III, Protection of Structures Containing Flammable Liquids and Gases	
C6.1-1944	Terminal Markings for Electrical Apparatus	1.00
C7.1-1947 R1951	Soft or Annealed Copper Wire, Specifications for (ASTM B3-45) (Formerly Designated H4.1-1947)	.25
C7.2-1951	★Hard-Drawn Copper Wire, Specifications for (ASTM B1-49) (Revision of H4.2-1941) Under revision	
C7.3-1951	★Medium-Hard-Drawn Copper Wire, Specifications for (ASTM B2-49) (Revision of H4.3-1941)	.25
C7.4-1951	★Tinned Soft or Annealed Copper Wire for Electrical Purposes, Specifications for (ASTM B33-50) (Revision of H4.4-1947) Under revision	
C7.5-1951	★Bronze Trolley Wire, Specifications for (ASTM B9-49) (Revision of H4.5-1947)	.25
C7.6-1951	★Copper Trolley Wire, Specifications for (ASTM B47-49) (Revision of H4.6-1947)	.25
C7.7-1951	★Hot-Rolled Copper Rods for Electrical Purposes, Specifications for (ASTM B49-50) (Revision of H4.7-1942)	.25
C7.8-1951	★Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft, Specifications for (ASTM B8-50)	.25
C7.9-1951	★Soft Rectangular and Square Bare Copper Wire for Electrical Conductors, Specifications for (ASTM B48-49) Under revision	
C7.10-1951	★Hard-Drawn Copper Alloy Wires for Electrical Conductors, Specifications for (ASTM B105-49)	.25
C7.11-1951	★Figure-9 Deep-Section Grooved and Figure-8 Copper Trolley Wire for Industrial Haulage, Specifications for (ASTM B116-49)	.25
C7.12-1951	★Rope-Lay Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors, Specifications for (ASTM B172-50T) Under revision	
C7.13-1951	★Rope-Lay Stranded Copper Conductors Having Concentric-Stranded Members, for Electrical Conductors, Specifications for (ASTM B173-50T) Under revision	
C7.14-1951	★Bunch-Stranded Copper Conductors for Electrical Conductors, Specifications for (ASTM B174-50T) Under revision	
C7.15-1951	★Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes, Specification for (ASTM B189-50) Under revision	
C7.16-1951	★Cored, Annular, Concentric-Lay-Stranded Copper Conductors, Specifications for (ASTM B226-50)	.25
C7.17-1951	★Hard-Drawn Copper Covered Steel Wire, Specifications for (ASTM B227-49)	.25
C7.18-1951	★Concentric-Lay-Stranded Copper Covered Steel Conductors, Specifications for (ASTM B228-49)	.25
C7.19-1951	★Concentric-Lay-Stranded Copper and Copper Covered Steel Composite Conductors, Specifications for (ASTM B229-49)	.25
C7.20-1951	★Hard-Drawn Aluminum Wire for Electrical Purposes, Specifications for (ASTM B230-50T)	.25
C7.21-1951	★Concentric-Lay-Stranded Aluminum Conductors, Hard-Drawn, Specifications for (ASTM B231-49)	.25
C7.22-1951	★Concentric-Lay-Stranded Aluminum Conductors, Steel-Reinforced (ACSR), Specifications for (ASTM B232-50T)	.25
C7.23-1951	★Rolled Aluminum Rods (EC Grade) for Electrical Purposes, Specifications for (ASTM B233-49)	.25
C7.24-1951	★Resistivity of Electrical Conductor Materials, Method of Test for (ASTM B193-49)	.25
C8.1-1944	Definitions and General Standards for Wire and Cables (AIEE 30-1944)	.40
C8.5-1936	Cotton-Covered Round Copper Magnet Wire, Specifications for	.60
C8.6-1936	Silk-Covered Round Copper Magnet Wire, Specifications for	
C8.7-1936	Enameled Round Copper Magnet Wire, Specifications for	

		Price
C8.9-1942	†Slow-Burning Wire and Cable, Specifications for	Under revision—Out of print
C8.10-1942	Impregnated Paper Insulation of Solid Type for Lead-Covered Power Cable	Out of print
C8.11-1936	†Code Rubber Insulation for Wire and Cable for General Purposes	Out of print
C8.12-1942	†Cotton Braid for Insulated Wire and Cable for General Purposes, Specifications for	.60
C8.13-1948	Varnished Cambric Insulated Cables, Specification for (IPCEA S-2-1946)	1.00
C8.14-1938	†Bare Concentric-Stranded Copper Cable for Insulated Conductors: Hard, Medium-Hard or Soft, Specifications for	Out of print
C8.15-1942	†Metallic Coverings for Insulated Wire and Cable, Specifications for	.35
C8.16-1940	†Rubber-Insulated Tree Wire, Specifications for	.60
C8.17-1936	†Class AO 30% Rubber Insulation for Wire and Cable for General Purposes	Under revision—Out of print
C8.18-1948	†Weather-Resistant (Weatherproof) Wire and Cable (URC Type), Specifications for	.60
C8.19-1939	†Weather-Resistant Saturants and Finishes for Aerial Rubber Insulated Wire and Cable, Specifications for	.40
C8.20-1939	†Heavy-Walled Enameled Round Copper Magnet Wire, Specifications for	.40
C11-1927	Hard Drawn Aluminum Conductors, Physical and Electrical Properties (AIEE 46-1927)	Out of print
C12-1941	Electricity Meters, Code for, including Supplement C12a-1947 (C12a-1947 sold separately 25¢)	2.00
C13-1926	Tubular Steel Poles for Electric Line Construction, Specifications for	Out of print
C16.4-1942	Loudspeaker Testing	.25
C16.5-1942	Volume Measurements of Electrical Speech and Program Waves	.20
C16.9-1943	†Power and Audio Transformers and Reactors (Home Receiver Replacement Type) (American War Standard)	.35
C16.11-1949	†Antennas, Methods of Testing (48 IRE 2.S1)	.75
C16.12-1949	†Frequency Modulation Broadcast Receivers, Methods of Testing (47 IRE 17.S1), with Supplement, C16.12a-1951, Effects of Mistuning and Downward Modulation, Methods of Testing for (49 IRE 17.S1)	1.25
C16.13-1949	†Television Receivers (Monochrome Service, 6-Megacycle Channel), Methods of Testing (48 IRE 22.S1)	1.00
C16.14-1949	†Color Codes: Numerical Values, Decimal Multipliers and Tolerances for Components for Electronic Equipment (RMA GEN-101)	.35
C16.15-1949	†Components for Electronic Equipment, Preferred Values for (RMA GEN-102)	.35
C16.16-1949	†Vibrating Interrupters and Rectifiers for Auto Radios (Frequency 115 Cycles) (RMA REC-113)	.35
C16.17-1951	†Piezoelectric Crystals, Terminology for (49 IRE 14.S1)	.80
C16.18-1951	†Vehicular Communications Receivers, Methods of Testing (49 IRE 16.S1)	.50
C16.19-1951	†Amplitude-Modulation Broadcast Receivers, Methods of Testing (48 IRE 17.S1)	1.00
C16.20-1951	†Television Signal Levels, Resolution, and Timing of Video Switching Systems, Methods of Measurement of (50 IRE 23.S1)	.75
C18-1947	Dry Cells and Batteries, Specifications for (NBS Circular C466)	.10
C19.1-1943	Industrial Control Apparatus (AIEE 15-1944)	.80
C29.1-1944	†Insulator Tests (AIEE 41-1944)	.80
C34.1-1949	Pool Cathode Mercury-Arc Power Converters	1.20
C35.1-1943	Rotating Electrical Machinery on Railway Locomotives and Rail Cars and Trolley, Gasoline-Electric and Oil-Electric Coaches (AIEE 11-1949)	.80
C37.1-1950	†Relays Associated with Electric Power Apparatus	.60
C37.2-1945	†Automatic Station Control, Supervisory, and Telemetering Equipments	.60
C37.4-1945	†Alternating-Current Power Circuit Breakers	
C37.5-1945	†Rms Value of a Sinusoidal Current Wave and a Normal-Frequency Recovery Voltage, Methods for Determining the	
C37.6-1949	†Preferred Ratings for Power Circuit Breakers, Schedules of (Also sold separately 35¢)	1.75
C37.7-1945	†Operating Duty (Duty Cycle) for Standard and Reclosing Service	
C37.8-1945	†Rated Control Voltages	
C37.9-1945	†Test Code for Power Circuit Breakers	
C39.1-1951	†Electrical Indicating Instruments	1.60
C39.3-1948	†Shock-Testing Mechanism for Electrical Indicating Instruments, Specifications for	.50
C40-1928	Storage Batteries (AIEE 36-1928)	Under revision—Out of print
C42-1941	Definitions of Electrical Terms	Under revision—Out of print
C48-1931	Electric Railway Control Apparatus, Standards for (AIEE 16-1933)	.60

Note: Minimum charge on any purchase is $0.25.

		Price
C50-1943	†Rotating Electrical Machinery	1.75
C52.3-1945	†Straight and Offset Resistance-Welding Electrodes and Electrode Holders (American War Standard)	.50
C52.4-1945	†Controls for Resistance-Welding Machines (American War Standard)	.35
C52.5-1945	†Specifications for Resistance-Welding Machines (American War Standard)	.75
C55.1-1951	★Capacitors, Standards for (AIEE 18)	.40
C57	**Transformers, Regulators, and Reactors:**	
C57.10-1948	†Transformers, Regulators, and Reactors, Terminology for	
C57.11-1948	†Transformers, Regulators, and Reactors, General Requirements for	
C57.12-1949	†Distribution, Power, and Regulating Transformers, and Reactors other than Current-Limiting Reactors	
C57.13-1948	†Instrument Transformers	
C57.14-1948	†Constant-Current Transformers of the Moving-Coil Type	
C57.15-1949	†Step-Voltage and Induction-Voltage Regulators (Also sold separately 50¢)	
C57.16-1948	†Current-Limiting Reactors	
C57.17-1948	†General-Purpose Specialty Transformers	
C57.18-1948	†Rectifier Transformer Equipment	
C57.22-1948	†Distribution, Power, and Regulating Transformers, Test Code for	
C57.23-1948	†Instrument Transformers, Test Code for	
C57.25-1949	†Step-Voltage and Induction-Voltage Regulators, Test Code for (Also sold separately 50¢)	4.00
C57.28-1948	†Rectifier Transformer Equipment, Test Code for	
C57.31-1948	†Operation of Transformers, Regulators, and Reactors at Altitudes Greater than 3300 Feet (1000 Meters), Guide for	
C57.32-1948	†Loading Oil-Immersed Distribution and Power Transformers, Guide for (also sold separately 50¢)	
C57.33-1948	†Loading and Operation of Instrument Transformers, Guide for	
C57.34-1948	†Loading Pole - Type Constant - Current Transformers, Guide for	
C57.35-1948	†Loading Step-Voltage and Induction-Voltage Regulators, Guide for	
C57.36-1948	†Loading Current-Limiting Reactors, Guide for	
C57.12a	Transformers — 67 Kv and below; 501 through 10,000 Kva, 3 Phase; 501 through 5,000 Kva, 1 Phase (Proposed American Standard; published for trial and criticism)	.40
C59.1-1947	Testing Molded Materials Used for Electrical Insulation, Methods of (ASTM D48-46T)	.25
C59.2-1944	Testing Electrical Insulating Oils, Method of (ASTM D117-43)	.25
C59.3-1952	★Insulation Resistance of Electrical Insulating Materials, Methods of Test for (ASTM D257-49T)	In press
C59.4-1935 R1945	Rubber Matting for Use Around Electrical Apparatus (Voltage Rating of Matting, 3000 Volts), Specifications for (ASTM D178-24)	.25
C59.6-1939 R1945	Rubber Insulating Tape, Specifications for (ASTM D119-38)	Under revision
C59.10-1941 R1945	Testing Molding Powders Used in Manufacturing Molded Electrical Insulators, Methods of (ASTM D392-38)	.25
C59.11-1948	Impact Resistance of Plastics and Electrical Insulating Materials, Methods of Test for (ASTM D256-47T)	.25
C59.12-1942	Replaced by J6.6-1952	
C59.13-1951	★Testing Sheet and Plate Materials Used in Electrical Insulation, Methods of (ASTM D229-49)	.25
C59.14-1948	Testing Laminated Tubes Used in Electrical Insulation, Methods of (ASTM D348-46)	.25
C59.15-1948	Testing Laminated Round Rods Used in Electrical Insulation, Methods of (ASTM D349-46)	.25
C59.16-1951	★Laminated Thermosetting Products (NEMA LP1-1951)	Under revision
C59.17-1949	Fabricating Laminated Plastics, Practice for (NEMA 45-107)	.25
C59.18-1943	Testing Shellac Used for Electrical Insulation, Methods of (ASTM D411-44)	Under revision
C59.20-1949	Vulcanized Fibre (NEMA Vul-1949)	.50
C59.21-1951	★Sampling Electrical Insulating Oils, Method for (ASTM D923-49)	.25
C59.22-1951	★Power Factor and Dielectric Constant of Electrical Insulating Oils of Petroleum Origin, Method of Test for (ASTM D924-49)	.25
C59.23-1951	★Gas Content of Insulating Oils, Methods of Test for (ASTM D831-48)	.25
C59.24-1951	★Inorganic Chlorides and Sulfates in Insulating Oils, Method of Test for (ASTM D878-49)	.25
C59.25-1951	★Detection of Free Sulphur in Electrical Insulating Oils, Method of Test for (ASTM D989-48T)	.25
C59.26-1951	★Natural Block Mica and Mica Films Suitable for Use in Fixed Mica-Dielectric Capacitors, Specifications for (ASTM D748-49)	.25

		Price
C60.1-1949	†Electron Tube Bases, Caps, and Terminals (RMA ET-103-A; NEMA 500-A)	1.00
C60.2-1949	†Electron Tubes, Dimensional Characteristics of (RMA ET-105-A; NEMA 502-A)	.50
C60.3-1949	†Gaskets for Water-Cooled Transmitting Tubes, Dimensional Characteristics of (RMA ET-104-A; NEMA 501-A)	.35
C60.4-1950	†Designation System for Metal Electron Tube Shells (RMA ET-112; NEMA 508)	.35
C62.1-1944	Lightning Arresters for Alternating-Current Power Circuits (AIEE 28-1944)	Under revision
C63.1-1946	†Radio Interference of Electrical Components and Completed Assemblies of Electrical Equipment for the Armed Forces from 150 Kilocycles to 20 Megacycles, Method of Measuring (American War Standard) (JAN-I-225)	Gratis
C63.2	Radio Noise Meter, 0.015 to 25 Megacycles/Second, Specifications for (RMA 32-A; NEMA 102-1950) (Proposed American Standard; published for trial and criticism)	.65
C64.1-1950	Brushes for Electrical Machines (NEMA CB1-1951)	1.50
C65.1-1942	Power-Operated Radio Receiving Appliances	Under revision
C67.1-1951	★†Preferred Nominal Voltages, 100 Volts and Under	.25
C68.1-1942	Measurement of Test Voltage in Dielectric Tests (AIEE 4-1943)	.80
C71.1-1950	Household Electric Ranges (NEMA ER1-1950)	.90
C72.1-1949	Household Automatic Electric Storage-Type Water Heaters (NEMA WH1-1949)	.90
C73-1941 R1946	Attachment Plugs and Receptacles, with supplements C73a-1950 (NEMA WD1-1950) and C73b-1951 (NEMA WD2-1951 (†C73a-1950 sold separately 25¢ ★†C73b-1951 sold separately 35¢)	.75
C74-1942	†Machine Tool Electrical Standards (American War Standard)	Out of print
C76.1-1943	Apparatus Bushings and Test Code for Apparatus Bushings (AIEE 21-1942)	.60
C77.1-1943	Wet Tests (AIEE 29-1941)	.40

C78 Incandescent Lamps:

(Special price of series with binder, $7.00; without binder, $5.00)

C78.100-1949	†General Service for 115-, 120-, and 125-Volt Circuits	.25
C78.101-1949	†General Service for 230- and 250-Volt Circuits	.25
C78.102-1949	†Train, Locomotive, and Country Home Service 30-34 and 60-64 Volts	.25
C78.103-1949	†Street Railway Service	.25
C78.105-1949	†Spotlight and Floodlight Service 115, 120, and 125 Volts	.25
C78.106-1949	†Infrared Lamps for 115-125 Volt Service	.25
C78.107-1949	†Projector and Reflector Spotlight and Floodlight Lamps 115, 120, and 125 Volts	.25
C78.109-1949	†Street Series Service	.25
C78.140-1949	†Miniature Incandescent Lamps	.25
C78.200-1949	†S-6 Bulb, Candelabra Screw Base and C-7 Bulb, Candelabra Screw Base	.25
C78.201-1949	†S-11 Bulb, Medium Screw Base	.25
C78.202-1949	†S-11 Bulb, Intermediate Screw Base	.25
C78.203-1949	†S-14 Bulb, Medium Screw Base	.25
C78.204-1949	†A-15 Bulb, Medium Screw Base	.25
C78.205-1949	†A-17 Bulb, Medium Screw Base	.25
C78.206-1949	†A-19 Bulb, Medium Screw Base (Overall Length: Max 3 11/16 Inches, Min 3 5/16 Inches)	.25
C78.207-1949	†T-6½ Bulb, Intermediate Screw Base	.25
C78.208-1949	†T-10 Bulb, Medium Screw Base	.25
C78.209-1949	†T-10 Reflector Bulb, Medium Screw Base	.25
C78.210-1949	†A-19 Bulb, Medium Screw Base (Overall Length: Max 4¼ Inches, Min 3⅞ Inches)	.25
C78.211-1949	†A-19 Bulb, Medium Screw Base (Overall Length: Max 4 7/16 Inches, Min 4 1/16 Inches)	.25
C78.212-1949	†T-8 Bulb, Medium Screw Base	.25
C78.213-1949	†PS-25 Bulb, Three-Contact Medium Screw Base	.25
C78.214-1949	†PS-25 Bulb, Three-Contact Mogul Screw Base	.25
C78.215-1949	†A-21 Bulb, Medium Screw Base (Overall Length: Max 4 7/16 Inches, Min 4⅛ Inches)	.25
C78.216-1949	†A-21 Bulb, Medium Screw Base (Overall Length: Max 5⅝ Inches, Min 4 9/16 Inches)	.25
C78.217-1949	†A-21 Bulb, Medium Screw Base (Overall Length: Max 4 13/16 Inches, Min 4 9/16 Inches)	.25
C78.218-1949	†A-23 Bulb, Medium Screw Base	.25
C78.219-1949	†G-30 Bulb, Three-Contact Mogul Screw Base	.25
C78.220-1949	†PS-25 Bulb, Medium Screw Base	.25
C78.221-1949	†PS-30 Bulb, Medium Screw Base	.25
C78.223-1949	†PS-35 Bulb, Mogul Screw Base	.25
C78.224-1949	†PS-40 Bulb, Mogul Screw Base	.25
C78.225-1949	†PS-52 Bulb, Mogul Screw Base	.25
C78.226-1949	†P-25 Bulb, Medium Screw Base	.25
C78.233-1949	†G-30 Bulb, Medium Screw Base	.25
C78.234-1949	†G-40 Bulb, Mogul Screw Base (Overall Length: Max 7 1/16 Inches, Min 6½ Inches)	.25
C78.235-1949	†G-40 Bulb, Mogul Screw Base (Overall Length: Max 8 Inches, Min 7 1/16 Inches)	.25
C78.236-1949	†R-40 Bulb, Medium Skirted Screw Base	.25
C78.237-1949	†R-40 Bulb, Medium Screw Base	.25
C78.238-1949	†PAR-38 Bulb, Medium Skirted Screw Base	.25
C78.245-1949	†PS-25 Bulb, Mogul Screw Base	.25
C78.248-1949	†T-64 Bulb, Mogul Bipost Base	.25
C78.249-1949	†G-30 Bulb, Medium Skirted Screw Base	.25

C78 Electric Discharge Lamps, Dimensional and Electrical Characteristics of:

(Special price of series with binder, $5.00; without binder, $3.00)

C78.400-1951	†4-Watt T-5 General Service	.25
C78.401-1951	†6-Watt T-5 General Service	.25
C78.402-1951	†8-Watt T-5 General Service	.25
C78.403-1951	†14-Watt T-12 General Service	.25
C78.404-1951	†15-Watt T-8 General Service	.25
C78.405-1951	†15-Watt T-12 General Service	.25
C78.406-1951	†20-Watt T-12 General Service	.25
C78.407-1951	†30-Watt T-8 General Service	.25
C78.408-1951	†40-Watt T-12 General Service	.25
C78.409-1951	†85-Watt T-17 General Service	.25
C78.410-1951	†100-Watt T-17 General Service	.25
C78.413-1951	★†32-Watt T-10 12-Inch Circular Preheat-Start	.25
C78.400-1951	★†40-Watt T-12 Instant-Start	.25
C78.401-1951	★†40-Watt T-17 Instant-Start	.25
C78.801-1951	†42-Inch T-6 Instant-Start Single-Pin Hot-Cathode	.25
C78.803-1951	†64-Inch T-6 Instant-Start Single-Pin Hot-Cathode	.25
C78.805-1951	†72-Inch T-8 Instant-Start Single-Pin Hot-Cathode	.25
C78.807-1951	†96-Inch T-8 Instant-Start Single-Pin Hot-Cathode	.25
C78.808-1951	★†48-Inch T-12 Instant-Start Single-Pin Hot-Cathode	.25
C78.809-1951	★†72-Inch T-12 Instant-Start Single-Pin Hot-Cathode	.25
C78.810-1951	★†96-Inch T-12 Instant-Start Single-Pin Hot-Cathode	.25
C78.1100-1951	†20-Millimeter 52-Inch Cold-Cathode	.25
C78.1101-1951	†20-Millimeter 64-Inch Cold-Cathode	.25
C78.1102-1951	†20-Millimeter 76-Inch Cold-Cathode	.25
C78.1103-1951	†20-Millimeter 84-Inch Cold-Cathode	.25
C78.1104-1951	†25-Millimeter 93-Inch Cold-Cathode	.25
C78.1105-1951	†20-Millimeter 93-Inch Cold-Cathode	.25
C78.1200-1951	†8-Watt T-5 Bactericidal Lamp	.25
C78.1201-1951	†15-Watt T-8 Bactericidal Lamp	.25
C78.1202-1951	†30-Watt T-8 Bactericidal Lamp	.25
C79.1-1948	†Glass bulbs Intended for Use with Electron Tubes and Electric Lamps, Nomenclature for	.50
C79.2-1948	†Molded Glass Flares Intended for Use with Electron Tubes and Electric Lamps, Nomenclature for	.25
C80.1-1950	†Rigid Steel Conduit, Zinc Coated, Specification for (NEMA 110-1950)	.50
C80.2-1950	†Rigid Steel Conduit, Enameled, Specification for (NEMA 111-1950)	.50
C80.3-1950	†Electrical Metallic Tubing, Zinc Coated, Specification for (NEMA 112-1950)	.35
C81.1-1951	†Rolled Threads for Screw Shells of Electric Lamp Holders and for Screw Shells of Unassembled Lamp Bases, Dimensions for	.35
C82.1	†Fluorescent Lamp Ballasts, Specification for (Proposed American Standard; published for trial and criticism)	.35
C82.2	†Fluorescent Lamp Ballasts, Method of Measurement of (Proposed American Standard; published for trial and criticism)	.50
C82.3	†Fluorescent Lamp Reference Ballasts, Specification for (Proposed American Standard; published for trial and criticism)	.35

For standard abbreviations and symbols in electrical engineering, see Z10 and Z32.

D — Automotive

D6.1-1948	Uniform Traffic Control Devices for Streets and Highways, Manual on	.75
D7.1-1941	†Inspection Requirements for Motor Vehicles	.35
D8.1-1951	★Railroad Highway Grade Crossing Protection (AAR Bulletin 3)	.50
D10.1-1951	★Adjustable Face Traffic Control Signal Head Standards (ITE Technical Report 1)	.50
D11.1-1943	Pre-Timed, Fixed Cycle, Traffic Signal Controllers (ITE Technical Report 2)	.50
D12.1-1947	Street and Highway Lighting	.50
D13.1-1950	Traffic-Actuated, Traffic Signal Controllers and Detectors, Specifications for	.50

G — Ferrous Materials and Metallurgy

		Price
G8.1-1947	Zinc (Hot-Galvanized) Coatings on Structural Steel Shapes, Plates and Bars, and Their Products, Specifications for (ASTM A123-47; AASHO M111-35)	.25
G8.2-1951	★Zinc-Coated (Galvanized) Iron or Steel Sheets, Specifications for (ASTM A93-50T)	.25
G8.3-1944	Zinc-Coated (Galvanized) Iron or Steel Telephone and Telegraph Line Wire, Specifications for (ASTM A111-43) **Under revision**	
G8.4-1935	Zinc-Coated (Galvanized) Iron or Steel Tie Wires, Specifications for (ASTM A112-33)	.25
G8.5-1935	Zinc-Coated Iron or Steel Chain-Link Fence Fabric Galvanized After Weaving, Specifications for (ASTM A117-33)	.25
G8.6-1943	Zinc-Coated Steel Wire Strand, "Galvanized" and Class A ("Extra Galvanized"), Specifications for (ASTM A122-41)	.25
G8.7-1947	**Replaced by B36.20-1951**	
G8.8-1937	Zinc-Coated (Galvanized) Wrought Iron Sheets, Specifications for (ASTM A163-36) **Under revision**	
G8.9-1948	Zinc-Coated (Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Wire Fencing, Specifications for (ASTM A116-48)	.25
G8.10-1948	Zinc-Coated (Galvanized) Iron or Steel Barbed Wire, Specifications for (ASTM A121-48)	.25
G8.11-1944	Zinc-Coated Steel Wire Strand (Class B and Class C Coatings), Specifications for (ASTM A218-41)	.25
G9.1-1933	Carbon-Steel and Alloy-Steel Blooms, Billets and Slabs for Forgings, Specifications for (ASTM A17-29) **Under revision**	
G12-1936	Refined Iron Bars, Specifications for (ASTM A41-36)	.25
G17.1-1944	Carbon-Steel Castings for Valves, Flanges, and Fittings for High-Temperature Service, Specifications for (ASTM A95-44)	.25
G17.2-1944	Alloy-Steel Bolting Material for High-Temperature Service, Specifications for (ASTM A96-44) **Under revision**	
G17.3-1947	Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Specifications for (ASTM A105-46)	.25
G20-1939	Mild Steel Plates, Specifications for (ASTM A10-39) **Under revision**	
G21-1939	Structural Rivet Steel, Specifications for (ASTM A141-39) **Under revision**	
G23-1939	Uncoated Wrought-Iron Sheets, Specifications for (ASTM A162-39)	.25
G24.1-1947	Steel for Bridges and Buildings, Specifications for (ASTM A7-46) **Under revision**	
G25.1-1948	Gray Iron Castings, Specifications for (ASTM A48-48; AASHO M105)	.25
G26.1-1942	Cast-Iron Culvert Pipe, Specifications for (ASTM A142-38)	.25
G27.1-1942	Lightweight and Thin-Sectioned Gray Iron Castings, Specifications for (ASTM A190-40) **Under revision**	
G28.1-1942	Boiler Rivet Steel and Rivets, Specifications for (ASTM A31-40) **Under revision**	
G29.1-1945	Carbon-Steel Plates for Stationary Boilers and Other Pressure Vessels, Specifications for (ASTM A70-44) **Under revision**	
G30.1-1943	Low Tensile Strength Carbon-Steel Plates of Flange and Firebox Qualities, Specifications for (ASTM A89-43) **Under revision**	
G31.1-1947	Carbon-Silicon Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels, Specifications for (ASTM A201-46) **Under revision**	
G32.1-1947	Chrome-Manganese-Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (ASTM A202-46) **Under revision**	
G33.1-1945	Low-Carbon Nickel-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (ASTM A203-44) **Under revision**	
G34.1-1947	Molybdenum-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (ASTM A204-46) **Under revision**	
G35.1-1947	High Tensile Strength Carbon-Silicon Steel Plates for Boilers and Other Pressure Vessels (Plates 4½ in. and Under in Thickness), Specifications for (ASTM A212-46) **Under revision**	
G36.1-1944	Alloy-Steel Castings for Valves, Flanges, and Fittings for High-Temperature Service, Specifications for (ASTM A157-44)	.25
G37.1-1949	Forged or Rolled-Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Specifications for (ASTM A182-48T) **Under revision**	
G38.1-1949	Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service, Specifications for (ASTM A194-48) **Under revision**	
G39.1-1947	Structural Steel for Locomotives and Cars, Specifications for (ASTM A113-46) **Under revision**	
G40.1-1943	Low Tensile Strength Carbon-Steel Plates of Structural Quality for Welding, Specifications for (ASTM A78-43) **Under revision**	
G41.1-1947	Structural Silicon Steel, Specifications for (ASTM A94-39) **Under revision**	
G42.1-1942	High-Strength Structural Rivet Steel, Specifications for (ASTM A195-41) **Under revision**	
G43.1-1942	Axle-Steel Bars for Concrete Reinforcement, Specifications for (ASTM A160-39) **Under revision**	
G44.1-1942	Fabricated Steel Bar or Rod Mats for Concrete Reinforcement, Specifications for (ASTM A184-37)	.25
G45.1-1942	Welded Steel Wire Fabric for Concrete Reinforcement, Specifications for (ASTM A185-37; AASHO M55-37)	.25
G46.1-1947	Forged or Rolled Steel Pipe Flanges for General Service, Specifications for (ASTM A181-46) **Under revision**	
G48.1-1949	Malleable Iron Castings, Specifications for (ASTM A47-48; AASHO M106)	.25
G49.1-1948	Cupola Malleable Iron, Specifications for (ASTM A197-47)	.25
G50.1-1945	Carbon-Steel Castings for Miscellaneous Industrial Uses, Specifications for (ASTM A27-44) **Under revision**	
G51.1-1944	Carbon-Steel Castings Suitable for Fusion Welding for Miscellaneous Industrial Uses, Specifications for (ASTM A215-44) **Under revision**	
G52.1-1944	Alloy-Steel Castings for Structural Purposes, Specifications for (ASTM A148-44) **Under revision**	

H — Nonferrous Materials and Metallurgy

		Price
H4.1-1947	**Replaced by C7.1-1947**	
H4.2-1941	**Replaced by C7.2-1951**	
H4.3-1941	**Replaced by C7.3-1951**	
H4.4-1947	**Replaced by C7.4-1951**	
H4.5-1947	**Replaced by C7.5-1951**	
H4.6-1947	**Replaced by C7.6-1951**	
H4.7-1942	**Replaced by C7.7-1951**	
H7.1-1949	Copper and Copper-Base Alloy Forging Rods, Bars, and Shapes, Specifications for (ASTM B124-49)	.25
H8.1-1949	Free-Cutting Brass Rod and Bar for Use in Screw Machines, Specifications for (ASTM B16-49)	.25
H13-1925	Plumbago Crucibles for Non-Tilting Furnaces in Non-Ferrous Foundry Practice, Outside Dimensions of	.25
H17.1-1942	Lake Copper Wire Bars, Cakes, Slabs, Billets, Ingots, and Ingot Bars, Specifications for (ASTM B4-42)	.25
H17.2-1943	Electrolytic Copper Wire Bars, Cakes, Slabs, Billets, Ingots, and Ingot Bars, Specifications for (ASTM B5-43; AASHO M110-45)	.25
H23.1-1951	★Seamless Copper Water Tube, Specifications for (ASTM B88-50) **Under revision**	
H24.1-1949	Slab Zinc (Spelter), Specifications for (ASTM B6-49; AASHO M120)	.25
H25.1-1943	Rolled Zinc, Specifications for (ASTM B69-39; AASHO M113-39)	.25
H26.1-1949	Seamless Copper Pipe, Standard Sizes, Specifications for (ASTM B42-49)	.25
H27.1-1949	Seamless Red Brass Pipe, Standard Sizes, Specifications for (ASTM B43-49)	.25
H28.1-1949	Bronze Castings in the Rough for Locomotive Wearing Parts, Specifications for (ASTM B66-49; AAR M-503)	.25
H29.1-1949	Car and Tender Journal Bearings, Lined, Specifications for (ASTM B67-49; AAR M-501)	.25
H30.1-1949	Copper-Silicon Alloy Wire for General Purposes, Specifications for (ASTM B99-49)	.25
H31.1-1949	Roller Copper-Alloy Bearings and Expansion Plates and Sheets for Bridge and Other Structural Uses, Specifications for (ASTM B100-49; AASHO M108)	.25
H32.1-1951	★Brass Wire, Specifications for (ASTM B134-50)	.25
H33.1-1951	★Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes, Specifications for (ASTM B140-50)	.25

J — Rubber

J1.1-1942	Sample Preparation for Physical Testing of Rubber Products, Methods of (ASTM D15-41) **Under revision**	
J2.1-1942	Tension Testing of Vulcanized Rubber, Methods of (ASTM D412-41) **Under revision**	
J3.1-1942	Adhesion of Vulcanized Rubber (Friction Test), Methods of Test for (ASTM D413-39)	.25
J4.1-1949	Accelerated Aging of Vulcanized Rubber by the Oxygen-Pressure Method, Method of Test for (ASTM D572-48) **Under revision**	
J5.1-1949	Accelerated Aging of Vulcanized Rubber by the Oven Method, Method of Test for (ASTM D573-48)	.25

		Price
J6	**Specifications for Rubber Protective Equipment for Electrical Workers:**	
J6.1-1950	Rubber Insulating Line Hose (ASTM D1050-49T)	.50
J6.2-1950	Rubber Insulator Hoods (ASTM D1049-49T)	
J6.4-1950	Rubber Insulating Blankets (ASTM D1048-49T)	
J6.5-1950	Rubber Insulating Sleeves (ASTM D1051-49T)	
J6.3-1945	†Leather Protective Gloves (American War Standard)	.25
J6.6-1952	Rubber Insulating Gloves, Specifications for (ASTM) (Revision of C59.12-1942)	In press

K — Chemical Industry

K5-1922	Alloys of Lead, Tin, Antimony and Copper, Methods of Chemical Analysis of (ASTM B18-36T)	**Under revision—Out of print**
K12-1921	Battery Assay of Copper, Methods of (ASTM B34-36T)	**Under revision**
K13.1-1950	†Identification of Gas - Mask Canisters, Safety Code for	.35
K15.1-1947	Chemical Analysis of White Pigments, Methods of (ASTM D34-47)	**Under revision**
K16.1-1944	Chemical Analysis of Dry Red Lead, Methods of (ASTM D49-44)	.25
K18.1-1948	Laboratory Sampling and Analysis of Coal and Coke, Methods of (ASTM D271-48)	.35
K20.1-1936	Cubic Foot Weight of Crushed Bituminous Coal, Method of Test for (ASTM D291-29)	.25
K20.2-1936	Cubic Foot Weight of Coke, Method of Test for (ASTM D292-29)	.25
K20.3-1951	Tumbler Test for Coke, Method of (ASTM D294-29)	.25
K20.4-1948	Drop Shatter Test for Coke, Method of Test for (ASTM D141-48)	.25
K21.1-1936	Toluene Insoluble Solid Matter in Rosin (Chiefly Sand, Chips, Dirt and Bark), Method of Test for (ASTM D269-30)	.25
K22.1-1944	Zinc Oxide, Specifications for (ASTM D79-44)	.25
K23.1-1943	Basic Carbonate White Lead, Specifications for (ASTM D81-43)	.25
K24-1941	Red Lead, Specifications for (ASTM D83-41)	.25
K25-1941	Mineral Iron Oxide, Specifications for (ASTM D84-41)	**Under revision**
K26.1-1947	Lampblack, Specifications for (ASTM D209-47)	.25
K27.1-1947	Chrome Yellow and Chrome Orange, Specifications for (ASTM D211-47)	.25
K28.1-1947	Reduced Chrome Green, Specifications for (ASTM D213-47)	.25
K29.1-1947	Iron Blue, Specifications for (ASTM D261-47; AASHO M131)	.25
K32-1937	Spirits of Turpentine, Specifications for (ASTM D13-34)	.25
K33-1937	Sampling and Testing Turpentine, Methods of (ASTM D233-36)	**Under revision**
K34.1-1949	Raw Linseed Oil, Specifications for (ASTM D234-48; AASHO M125-49)	.25
K35.1-1949	Boiled Linseed Oil, Specifications for (ASTM D260-48)	.25
K36.1-1947	Bone Black, Specifications for (ASTM D210-47)	.25
K37.1-1946	Chrome Oxide Green, Specifications for (ASTM D263-46)	.25
K41-1939	Specific Gravity of Pigments, Methods of Test for (ASTM D153-39)	.25
K42.1-1945	Coarse Particles in Pigments, Pastes, and Paints, Methods of Test for (ASTM D185-45)	.25
K44.1-1951	★Yellow, Orange, Red and Brown Pigments Containing Iron and Manganese, Methods of Chemical Analysis of (ASTM D50-50)	.25
K45-1941	Titanium Dioxide Pigments, Specifications for (ASTM D476-41)	.25
K46-1940	Sampling Coal for Analysis, Method of (ASTM D21-40)	**Under revision**
K47.1-1945	Basic Sulfate White Lead, Specifications for (ASTM D82-44)	.25
K48-1941	Blue Lead; Basic Sulfate, Specifications for (ASTM D405-41)	.25
K49-1941	C. P. Para Red Toner, Specifications for (ASTM D475-41)	**Under revision**
K50.1-1949	Zinc Yellow (Zinc Chromate), Specifications for (ASTM D478-49)	.25
K51-1941	Alkalinity or Acidity of Pigments, Method of Test for (ASTM D278-31)	.25
K52-1941	Bleeding of Pigments, Methods of Test for (ASTM D279-31)	.25
K53-1941	Hydroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments, Method of Test for (ASTM D280-33)	.25
K54-1941	Oil Absorption of Pigments, Method of Test for (ASTM D281-31)	.25
K55-1941	Acetone Extract in Dry Lampblack and Dry Bone Black, Method of Test for (ASTM D305-31)	**Under revision**
K56-1941	Tinting Strength of White Pigments, Method of Test for (ASTM D332-36)	.25
K57-1941	Mass Color and Tinting Strength of Color Pigments, Method of Test for (ASTM D378-36)	.25
K58-1941	Chemical Analysis of Yellow and Orange Pigments Containing Chromium Compounds, Blue Pigments, and Chrome Green, Methods of (ASTM D126-36)	.25
K59-1941	Chemical Analysis of Dry Mercuric Oxide, Method of (ASTM D284-33)	.25
K60.1-1949	Chip Soap, Specifications for (ASTM D496-39)	.25
K60.2-1949	Ordinary Bar Soap, Specifications for (ASTM D497-39)	.25
K60.3-1949	Powdered Soap (Nonalkaline Soap Powder), Specifications for (ASTM D498-39)	.25
K60.4-1949	White Floating Toilet Soap, Specifications for (ASTM D499-48)	.25
K60.5-1949	Alkaline Soap Powder, Specifications for (ASTM D534-42)	.25
K60.6-1949	Milled Toilet Soap, Specifications for (ASTM D455-48)	.25
K60.7-1949	Built Soap, Powdered, Specifications for (ASTM D533-44)	.25
K60.8-1949	Compound Chip Soap (with Rosin), Specifications for (ASTM D690-48)	.25
K60.9-1949	Compound Powdered Soap (Granulated, with Rosin), Specifications for (ASTM D691-44)	.25
K60.10-1949	Caustic Soda, Specifications for (ASTM D456-39)	.25
K60.11-1949	Soda Ash, Specifications for (ASTM D458-39)	.25
K60.12-1949	Trisodium Phosphate, Specifications for (ASTM D538-44)	.25
K60.13-1949	Salt-Water Soap, Specifications for (ASTM D593-42)	.25
K60.14-1949	Liquid Toilet Soap, Specifications for (ASTM D799-45)	.25
K60.15-1949	Olive Oil Chip Soap (Type A, Straight; Type B, Blended), Specifications for (ASTM D630-42)	.25
K60.16-1949	Palm Oil Chip Soap (Type A, Straight; Type B, Blended), Specifications for (ASTM D536-42)	.25
K60.17-1949	Modified Soda (Sesquicarbonate Type), Specifications for (ASTM D457-39)	.25
K60.18-1949	Sodium Metasilicate, Specifications for (ASTM D537-41)	.25
K60.19-1949	Sodium Sesquisilicate, Specifications for (ASTM D594-41)	.25
K60.20-1949	Tetrasodium Pyrophosphate (Anhydrous), Specifications for (ASTM D595-45)	.25
K60.21-1950	Sampling and Chemical Analysis of Alkaline Detergents, Methods of (ASTM D501-49)	.25

L — Textile Industry

L1.1-1947	†Textile Safety Code	.50
L3.1-1941	Cotton Rubber-Lined Fire Hose for Public and Private Fire Department Use, Specifications for (ASTM D296-38)	**Under revision**
L4.1-1948	†Bleached Cotton Bed Sheets and Pillowcases, Specifications for	.25
L10-1936 R1945	Shrinkage in Laundering of Woven Cotton Cloth, Method of Test for (ASTM D437-36)	.25
L11.1-1941	†Body Sizes for Boys' Garments	.35
L12	**Definitions (including Tolerances) for Filling Materials for Bedding and Upholstery:**	
L12.1-1946	†Cotton	.50
L12.2-1946	†Wool	
L12.4-1946	†Miscellaneous	
L13.1-1942	Tubular Sleeving and Braids, Methods of Testing and Tolerances for (ASTM D354-41)	.25
L14.1-1949	†Accelerated Ageing of Textiles Dyed with Sulfur Colors (AATCC 26-44)	.25
L14.2-1949	†Colorfastness of Textiles to Acids and to Alkalies (AATCC 6-25)	.25
L14.3-1949	†Colorfastness of Wool Textiles to Carbonizing (AATCC 11-41)	.25
L14.4-1949	†Colorfastness of Silk to Degumming (AATCC 7-28)	.25
L14.5-1949	†Colorfastness of Textiles to Pulling (AATCC 13-32)	.25
L14.6-1949	†Colorfastness of Wool Textiles to Mill Washing and Scouring (AATCC 1-32)	.25
L14.7-1949	†Colorfastness of Silk to Peroxide Bleaching (AATCC 13-32)	.25
L14.8-1949	†Colorfastness of Textiles to Sea Water (AATCC 12-31)	.25
L14.9-1949	†Colorfastness of Textiles to Stoving (AATCC 9-28)	.25
L14.10-1949	†Test for Mercerization (AATCC 19-37)	.25
L14.11-1949	†Evaluation of Wetting Agents (AATCC 17-43)	.25
L14.12-1951 2nd ed.	★Definition of Terms Relating to Textile Materials (ASTM D123-50)	**Under revision**
L14.13-1951	Testing and Tolerances for Cotton Yarn,	

		Price
	General Methods of (ASTM D180-49T)	.25
L14.14-1949	Testing and Tolerances for Cotton Sewing Threads, Methods of (ASTM D204-42)	.25
L14.15-1949	Test for Osnaburg, Cement Sacks, Methods of (ASTM D205-39)	.25
L14.16-1949	Testing and Tolerances for Woven Tapes, Methods of (ASTM D259-44)	.25
L14.17-1949	Testing and Tolerances for Certain Light and Medium Weight Cotton Fabrics, Methods of (ASTM D274-36)	.25
L14.18-1951 2nd ed.	★Asbestos Yarns, Specifications and Methods of Test for (ASTM D299-50T)	Under revision
L14.19-1949	Determining Relative Humidity, Method of (ASTM D337-34)	.25
L14.20-1949	Holland Cloth, Methods of Test for (ASTM D376-35)	.25
L14.21-1949	Woolen Yarns, Specifications and Methods of Test for (ASTM D403-48T)	.25
L14.22-1949	Worsted Yarns, Specifications and Methods of Test for (ASTM D404-48T)	.25
L14.23-1951	Testing Cotton Fibers, General Methods of (ASTM D414-49T)	.40
L14.24-1949	**Replaced by L14.68-1951**	
L14.25-1949	Testing Pile Floor Covering, Methods of (ASTM D418-42)	.25
L14.26-1951	★Fineness of Wool, Methods of Test for (ASTM D419-50T)	.25
L14.27-1949	Testing and Tolerances for Certain Carded Cotton Gray Goods, Methods of (ASTM D433-39)	.25
L14.28-1949	Testing and Tolerances for Certain Wool and Part Wool Fabrics, Methods of (ASTM D462-44)	.25
L14.29-1951	★Fineness of Wool Tops, Specifications and Methods of Test for (ASTM D472-50T)	.25
L14.30-1949	Testing and Tolerances for Spun Rayon and Estron Yarns and Threads, Methods of (ASTM D507-44)	.25
L14.31-1949	Testing and Tolerances for Yarns Spun from Mixed Fibers, Methods of (ASTM D508-43)	.25
L14.32-1951	Fiber Length of Wool, Method of Test for (ASTM D519-49)	.25
L14.33-1949	Testing Rayon and Estron Staple, Methods of (ASTM D540-44)	.25
L14.34-1951	Testing and Tolerances for Single Jute Yarn, Methods of (ASTM D541-49)	.25
L14.35-1949	Testing Woven Asbestos Cloth, Methods of (ASTM D577-42)	.25
L14.36-1951 2nd ed.	★Testing and Tolerances for Glass Yarn, Methods of (ASTM D578-50T)	.25
L14.37-1951	Testing and Tolerances for Woven Glass Fabrics, Methods of (ASTM D579-49)	.25
L14.38-1951	Testing and Tolerances for Woven Glass Tapes, Methods of (ASTM D580-49)	.25
L14.39-1951	Testing and Tolerances for Woven Glass Tubular Sleeving and Braids, Methods of (ASTM D581-49)	.25
L14.40-1951	★Hard Scoured Wool in Wool in the Grease (Laboratory Scale Operations), Method of Test for (ASTM D584-50)	.25
L14.41-1949	Testing Asbestos Tubular Sleeving, Methods of (ASTM D628-44)	.25
L14.42-1949	Testing and Tolerances for Certain Fine Staple Cotton Gray Goods, Methods of (ASTM D679-44)	.25
L14.43-1949	Testing and Tolerances for Certain All-Cotton and Cotton and Rayon Fine Fancy Goods, Methods of (ASTM D680-44)	.25
L14.44-1949	Testing and Tolerances for Jute Rove and Plied Yarn for Electrical and Packing Purposes, Methods of (ASTM D681-48)	.25
L14.45-1949	Testing and Tolerances for Rope (Leaf and Bast Fibers), Methods of (ASTM D738-46)	.25
L14.46-1949	Testing and Tolerances for Spun, Twisted, or Braided Products Made from Flax, Hemp, Ramie, or Mixtures Thereof, Methods of (ASTM D739-46)	.25
L14.47-1949	Compatibility of Glass Yarn with Insulating Varnish, Method of Test for (ASTM D886-46T)	Under revision
L14.48-1951	★Universal System of Yarn Numbering (ASTM D861-50)	.25
L14.49-1949	Test for Determination of Small Amounts of Copper, Manganese and Nickel in Textiles, Method of (ASTM D377-47T)	Under revision
L14.50-1949	Cotton Goods for Rubber and Pyroxylin Coating, Specifications and Methods of Test for (ASTM D334-40)	.25
L14.51-1949	Air Permeability of Textile Fabrics, Methods of Test for (ASTM D737-46)	.25
L14.52-1951 2nd ed.	★Testing Felt, Methods of (ASTM D461-50)	Under revision
L14.53-1951	†Colorfastness to Light (AATCC 16-45)	In press
L14.54-1951	†Colorfastness of Acetate Rayons to Atmospheric Fumes (AATCC 23-46)	In press
L14.55-1951	†Resistance of Textiles to Mildew and Rot, and Evaluation of Textile Fungicides (AATCC 30-46)	In press
L14.56-1951	†Colorfastness to Perspiration (AATCC 15-45)	In press
L14.57-1951	†Colorfastness to Chlorine Bleaching (AATCC 3-42)	In press
L14.58-1951	†Colorfastness to Peroxide Bleaching (AATCC 29-45)	In press
L14.59-1951	†Water Resistance of Fabrics — Resistance to Hydrostatic Pressure (AATCC 18-41)	In press
L14.60-1951	†Resistance to Water Spray (AATCC 22-41)	In press
L14.61-1951	†Resistance to Absorption of Water During Immersion (AATCC 21-41)	In press
L14.63-1951	†Colorfastness to Pleating (AATCC 31-46)	In press
L14.64-1951	†Resistance of Textile Fabrics and Yarns to Insect Pests (AATCC 24-49)	In press
L14.65-1951	†Evaluation of Insect Pest Deterrents on Textiles (AATCC 28-49)	In press
L14.66-1951	Textile Testing Machines, Specifications for (ASTM D76-49)	.25
L14.67-1951	Testing and Tolerances for Knit Goods, Methods of (ASTM D231-46)	.25
L14.68-1951	Testing Woven Textile Fabrics, General Methods of (ASTM D39-49)	.25

L17 Specifications for Women's Industrial Clothing (American War Standards):

L17.1-1944	†Bungalow Aprons, and Wrap-around and Coat Style Dresses	.50
L17.2-1944	†Slacks, Dungarees, Overalls, and Coveralls	.50
L17.3-1944	†Jackets, Shirts, and Aprons	.50
L17.4-1944	†Regular and Princess Model Coat Style Dresses	.35

L18 Specifications for Protective Occupational (Safety) Clothing (American War Standards):

(Special price of series, $3.00)

L18.1-1944	†Leather Aprons	.50
L18.2-1944	†Cape Sleeves and Bibs	
L18.3-1944	†Knee-Length Leggings	
L18.4-1944	†Leather Coats	.50
L18.5-1944	†Leather Overalls	
L18.6-1944	†Leather Sleeves	
L18.7-1944	†Welders' Leather Gauntlet Gloves	.50
L18.8-1944	†Protective Leather Gloves, Steel-Stapled	
L18.9-1944	†Asbestos Gloves	
L18.10-1944	†Asbestos Gloves, Leather Reinforced	
L18.11-1944	†Asbestos Mittens	
L18.12-1944	†Asbestos Mittens, Leather Reinforced	
L18.14-1944	†Asbestos Aprons (Bib Type)	.50
L18.15-1944	†Asbestos Cape Sleeves and Bibs	
L18.16-1944	†Asbestos Leggings (Knee and Hip Length)	
L18.17-1944	†Asbestos Coats	
L18.18-1945	†Leather One-Finger Mittens	.50
L18.19-1945	†Leather Mittens	
L18.20-1945	†Asbestos One-Finger Mittens	
L18.21-1945	†Flame-Resistant Fabric Aprons (Bib Type)	.50
L18.22-1945	†Flame-Resistant Fabric Leggings (Knee and Hip Length)	
L18.23-1945	†Flame-Resistant Fabric Coats	
L18.24-1945	†Flame-Resistant Fabric Pants	
L18.25-1945	†Flame-Resistant Fabric Coveralls	
L18.26-1945	†Flame-Resistant Fabric Spats	.50
L18.27-1945	†Leather Spats	
L18.28-1945	†Asbestos Spats	
L18.29-1945	†Chemical-Resistant Gloves	.35

M — Mining

M2.1-1951	★Installing and Using Electrical Equipment in Coal Mines, Safety Rules for (BMTP 402)	In press
M5-1932	Screen Testing of Ores (Hand Method) Methods for	.25
M6-1931	†Drainage of Coal Mines	.75
M7.1-1933	†Frogs, Switches and Turnouts for Coal Mine Tracks (Drawings for Light Rail Turnouts)	.75
M7.2-1935	†Frogs, Switches and Turnouts for Coal Mine Tracks (Drawings for Heavy Rail Turnouts)	
M11-1927	Wire Rope for Mines	Under revision
M12.1-1946	†Construction and Maintenance of Ladders and Stairs for Mines	.35
M13-1925 R1942	†Rock-Dusting Coal Mines to Prevent Coal Dust Explosions	.25
M14-1930	†Explosives in Bituminous Coal Mines, Use of	.35
M15-1931	†Coal Mine Transportation, Safety Code for	.35
M17-1930	†Fire Fighting Equipment in Metal Mines	gratis
M18-1928	†Underground Transportation in Metal Mines	gratis
M19-1928	†Mechanical Loading Underground in Metal Mines	gratis
M20.1-1938	Classification of Coals by Rank, Specifications for (ASTM D388-38)	.25
M20.2-1937	Classification of Coals by Grade, Specifications for (ASTM D389-37)	.25
M20.3-1944	Designating the Size of Coal from Its Screen Analysis, Method for (ASTM D431-44)	.25
M20.4-1939	Commercial Varieties of Bituminous and Subbituminous Coals, Definitions for (ASTM D493-39)	.25
M24-1932	†Installing and Using Electrical Equipment in Metal Mines, Safety Rules for	gratis

O — Wood Industry

		Price
O1.1-1944	†Woodworking Machinery, Safety Code for	.75
O3-1926	Cross-ties and Switch-ties, Specifications for **Under revision**	
O4a-1927	Testing Small Clear Specimens of Timber, Methods of (ASTM D143-27) **Under revision**	
O4b-1927	Static Tests of Timbers in Structural Sizes, Methods of (ASTM D198-27)	.25
O5.1-1948	†Wood Poles, Specifications and Dimensions for	.50
O6-1939	Round Timber Piles, Specifications for (ASTM D25-37)	.25

P — Pulp and Paper Industry

P1-1936	†Paper and Pulp Mills, Safety Code for **Under revision**	

PH — Photography (see also Z22 and Z38)

PH22 Motion Pictures: (see also Z22)

PH22.73-1951	★†32-Millimeter on 35-Millimeter Motion Picture Negative Raw Stock, Cutting and Perforating Dimensions for	.25
PH22.74-1951	★†Zero Point for Focusing Scales on 16-Millimeter and 8-Millimeter Motion Picture Cameras	.25
PH22.76-1951	★†Mounting Threads and Flange Focal Distances for Lenses on 16-Millimeter and 8-Millimeter Motion Picture Cameras	.25
PH22.82-1951	★†Sound Transmission of Perforated Projection Screens	.25

X — Office Equipment and Supplies

X2.1.1-1951	★†Desks and Tables for General Office Use, Dimensions of	.25
X2.4.1-1951	★†Index Cards and Record-Keeping Cards, Size Designation for	.25

Y — Drawings and Symbols

(see also Z10, Z14, Z15, and Z32)

Y32.1.1-1951	★Single (One) Line Electrical Engineering Diagrams, Graphical Symbols for	1.40

Z — Miscellaneous

Z1.1-1941	†Guide for Quality Control	1.00
Z1.2-1941	†Control Chart Method of Analyzing Data (American War Standards)	
Z1.3-1942	†Control Chart Method of Controlling Quality During Production (American War Standard)	1.00
Z2-1938	Protection of Heads, Eyes, and Respiratory Organs, Safety Code for (NBS Handbook H24) **Under revision**	
Z4.1-1935	†Industrial Sanitation in Manufacturing Establishments, Safety Code for	.50
Z4.2-1942	†Drinking Fountains, Specifications for	.25
Z4.3-1935	Sanitary Privy (Supplement No. 108 to the Public Health Reports) **Under revision—Out of print**	
Z7.1-1942	Illuminating Engineering Nomenclature and Photometric Standards	.50
Z8-1941	†Laundry Machinery and Operations, Safety Code for	.35
Z9	†Fundamentals Relating to the Design and Operation of Exhaust Systems (Report published for comment)	.50
Z9.1-1951	†Ventilation and Safe Operation of Open-Surface Tanks	.75

Z10 Symbols and Abbreviations: (see also B6.3, Y32, Z7.1, and Z32)

Z10f-1928	Mathematical Symbols	.40
Z10g5-1933	Graphical Symbols Used for Electric Traction including Railway Signaling (AIEE 17g5-1934) **Out of print**	
Z10.1-1941	Abbreviations for Scientific and Engineering Terms	.50
Z10.2-1942	Letter Symbols for Hydraulics	.50
Z10.3-1948	Letter Symbols for Mechanics of Solid Bodies	.50
Z10.4-1943	Letter Symbols for Heat and Thermodynamics Including Heat Flow	.65
Z10.5-1949	Letter Symbols for Electrical Quantities	.60
Z10.6-1948	Letter Symbols for Physics	1.00
Z10.7-1950	†Letter Symbols for Aeronautical Sciences	1.25
Z10.8-1949	Letter Symbols for Structural Analysis	.50
Z10.12-1946	Letter Symbols for Chemical Engineering	.50

Z11 Petroleum Products: (Special price of series, $10.00)

Z11.1-1936 R1947	Standard Abridged Volume Correction Table for Petroleum Oils (ASTM D206-36; API 500-36)	.25
Z11.2-1944 R1949	Viscosity by Means of the Saybolt Viscosimeter, Method of Test for (ASTM D88-44; API 518-44; AASHO T72-44)	.25
Z11.3-1949	Cone Penetration of Lubricating Grease, Test for (ASTM D217-48)	.25
Z11.4-1942 R1947	Melting Point of Paraffin Wax, Method of Test for (ASTM D87-42; API 513-42)	.25
Z11.5-1948	Cloud and Pour Points, Method of Test for (ASTM D97-47; API 506-47)	.25
Z11.6-1947	Flash and Fire Points by Means of Open Cup, Method of Test for (ASTM D92-46; API 511-46; AASHO T48-46)	.25
Z11.7-1947	Flash Point by Means of the Pensky-Martens Closed Tester, Method of Test for (ASTM D93-46; API 510-46; AASHO T73-46)	.25
Z11.9-1947	Water in Petroleum Products and Other Bituminous Materials, Method of Test for (ASTM D95-46; API 519-46; AASHO T55-46)	.25
Z11.10-1947	Distillation of Gasoline, Naphtha, Kerosine, and Similar Petroleum Products, Method of Test for (ASTM D86-46; API 507-46; AASHO T115-46)	.25
Z11.11-1940 R1947	Distillation of Natural Gasoline, Method of Test for (ASTM D216-40; API 508-40)	.25
Z11.13-1951	★Sulfur in Petroleum Products by the Bomb Method, Method of Test for (ASTM D129-51)	.25
Z11.14-1950	Thermal Value of Fuel Oil, Method of Test for (ASTM D240-50; API 517-50)	.25
Z11.15-1936 R1947	Steam Emulsion of Lubricating Oils, Method of Test for (ASTM D157-36; API 515-36) **Withdrawn**	
Z11.16-1948	Analysis of Grease, Methods of (ASTM D128-47; API 501-47)	.25
Z11.17-1949	Burning Quality of Kerosine, Method of Test for (ASTM D187-49)	.25
Z11.18-1930 R1947	Burning Quality of Mineral Seal Oil, Method of Test for (ASTM D239-30; API 504-30)	.25
Z11.19-1936 R1947	Burning Quality of Long-Time Burning Oil for Railway Use, Method of Test for (ASTM D219-36; API 503-36)	.25
Z11.20-1949	Saponification Number of Petroleum Products by Color-Indicator Titration, Method of Test for (ASTM D94-48T)	.25
Z11.21-1930 R1947	Detection of Free Sulfur and Corrosive Sulfur Compounds in Gasoline, Method of Test for (ASTM D130-30; API 521-30) **Under revision**	
Z11.22-1949	Melting Point of Petrolatum and Microcrystalline Wax, Method of Test for (ASTM D127-49)	.25
Z11.23-1932 R1947	Autogenous Ignition Temperatures of Petroleum Products, Method of Test for (ASTM D286-30; API 522-30)	.25
Z11.24-1951	★Flash Point by Means of the Tag Closed Tester, Method of Test for (ASTM D56-51; API 509-51)	.25
Z11.25-1947	Carbon Residue of Petroleum Products (Conradson Carbon Residue), Method of Test for (ASTM D189-46; API 505-46)	.25
Z11.26-1941 R1947	Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of Test for (ASTM D158-41; API 512-41)	.25
Z11.28-1951	★Terms Relating to Petroleum, Definitions of (ASTM D288-51)	.25
Z11.29-1935 R1947	Dilution of Crankcase Oils, Method of Test for (ASTM D322-35; API 524-35)	.25
Z11.30-1940 R1947	Precipitation Number of Lubricating Oils, Method of Test for (ASTM D91-40; API 527-40)	.25
Z11.31-1939 R1947	Gravity of Petroleum and Petroleum Products by Means of the Hydrometer, Method of Test for (ASTM D287-39; API 526-39)	.25

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Z11.32-1941 R1947	Distillation of Crude Petroleum, Method of Test for (ASTM D285-41; API 525-41)	.25
Z11.33-1935	Sampling Petroleum and Petroleum Products, Methods of (ASTM D270-33; API 528-33)	Under revision
Z11.35-1949	Color of Refined Petroleum Oil by Means of Saybolt Chromometer, Method of Test for (ASTM D156-49)	.25
Z11.36-1950	Existent Gum in Gasoline (Air-Jet Evaporation), Method of Test for (ASTM D381-50; API 529-50)	.25
Z11.37-1949	Knock Characteristics of Motor Fuels by the Motor Method, Test for (ASTM D357-48)	.25
Z11.39-1943 R1947	Viscosity-Temperature Charts for Liquid Petroleum Products (ASTM D341-43; API 533-43) (Charts A, B, C, D, and E)	1.25
Z11.41-1951	★Unsulfonated Residue of Plant Spray Oils, Method of Test for (ASTM D483-51T; API 536-51)	.25
Z11.42-1940 R1947	Stoddard Solvent, Specifications for (ASTM D484-40; API 537-40)	.25
Z11.43-1951	★Distillation of Plant Spray Oils, Method of Test for (ASTM D447-51T; API 538-51)	.25
Z11.44-1949	Vapor Pressure of Petroleum Products (Reid Method), Method of Test for (ASTM D323-49)	.25
Z11.45-1941 R1947	Calculating Viscosity Index, Method for (ASTM D567-41; API 540-41)	.25
Z11.46-1941 R1947	Conversion of Kinematic Viscosity to Saybolt Universal Viscosity, Method for (ASTM D446-39; API 534-39)	.25
Z11.47-1951	★Carbon Residue of Petroleum Products (Ramsbottom Carbon Residue), Method of Test for (ASTM D524-51T; API 541-51)	.25
Z11.48-1949	Tetraethyl Lead in Gasoline, Method of Test for (ASTM D526-48T)	.25
Z11.49-1945 R1949	Carbonizable Substance in White Mineral Oil (Liquid Petrolatum), Method of Test for (ASTM D565-45; API 545-45)	.25
Z11.50-1945 R1949	Carbonizable Substances in Paraffin Wax, Method of Test for (ASTM D612-45; API 544-45)	.25
Z11.51-1943 R1947	Dropping Point of Lubricating Grease, Method of Test for (ASTM D566-42; API 543-42)	.25
Z11.52-1948	Oil Content of Paraffin Wax, Test for (ASTM D721-47; API 546-47)	Under revision
Z11.53-1944 R1949	Conversion of Kinematic Viscosity to Saybolt Furol Viscosity, Method for (ASTM D666-44; API 548-44)	.25
Z11.54-1947	Ash Content of Petroleum Oils, Method of Test for (ASTM D482-46; API 549-46)	.25
Z11.56-1949	Chemical Analysis for Metals in Lubricating Oils, Methods of (ASTM D811-48)	.25
Z11.57-1949	Sulfated Residue, Lead, Iron, and Copper in New and Used Lubricating Oils, Methods of Test for (ASTM D810-48)	.25
Z11.58-1949	Sediment in Fuel Oil by Extraction, Method of Test for (ASTM D473-48)	.25
Z11.59-1951	★Neutralization Value (Acid and Base Numbers) by Electrometric Titration, Method of Test for (ASTM D664-51)	.25
Z11.60-1949	Oxidation Stability of Aviation Gasoline (Potential Gum Method), Method of Test for (ASTM D873-49)	.25
Z11.61-1949	Congealing Point of Pharmaceutical Petrolatums, Method of Test for (ASTM D938-49)	.25
Z11.62-1949	Measurement of Density of Hydrocarbon Liquids by the Pycnometer, Method for (ASTM D941-49)	.25
Z11.63-1949	Oxidation Stability of Gasoline (Induction Period Method), Method of Test for (ASTM D525-49)	.25
Z11.64-1950	Interfacial Tension of Oil Against Water by the Ring Method, Test for (ASTM D971-50)	.25
Z11.65-1950	Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method, Test for (ASTM D942-50)	.25
Z11.66-1950	Determination of Butadiene Content of Polymerization Grade Butadiene (ASTM D973-50)	.25
Z11.67-1950	Saponification Number of Petroleum Products by Potentiometric Titration, Test for (ASTM D939-50)	.25
Z11.68-1951	★Sulfated Residue from New Lubricating Oils, Test for (ASTM D874-51)	.25
Z11.69-1951	★Knock Characteristics of Motor Fuels by the Research Method, Test for (ASTM D908-51)	In press
Z11.70-1951	★Benzene and Toluene by Ultra-Violet Spectrophotometry, Test for (ASTM D1017-51)	.25
Z11.71-1951	★Olefinic Plus Aromatic Hydro-carbons in Petroleum, Test for (ASTM D1019-51)	.25
Z11.72-1951	★Apparent Viscosity of Lubricating Greases, Test for (ASTM D1092-51)	.25
Z11.73-1951	★Sodium in Lubricating Oils and Lubricating Oil Additives, Test for (ASTM D1026-51)	.25

Z12 Dust Explosions:

Z12.1-1946	Pulverized-Coal Systems, Safety Code for the Installation and Operation of (NFPA 60A)	3.00
Z12.2-1944	Starch Factories, Safety Code for the Prevention of Dust Explosions in (NFPA 61A)	
Z12.3-1946	Flour and Feed Mills, Safety Code for the Prevention of Dust Explosions in (NFPA 61C)	
Z12.4-1950	Terminal Grain Elevators, Safety Code for the Prevention of Dust Explosions in (NFPA 61B)	
Z12.5-1942	Woodworking Plants, Safety Code for the Prevention of Dust Explosions in (NFPA 663)	
Z12.6-1946	Sugar and Cocoa, Safety Code for Pulverizing Systems for (NFPA 62)	
Z12.7-1946	Coal Pneumatic Cleaning Plants, Safety Code for the Prevention of Dust Explosions in (NFPA 653)	
Z12.8-1946	Wood Flour Manufacturing Establishments, Safety Code for the Prevention of Dust Explosions in (NFPA 662)	
Z12.9-1946	Spice Grinding Plants, Safety Code for the Prevention of Dust Ignitions in (NFPA 656)	
Z12.10-1943	Inert Gas for Fire and Explosion Prevention, Safety Code for the Use of (NFPA 12A)	
Z12.11-1946	Aluminum Bronze Powder, Safety Code for the Prevention of Dust Explosions in the Manufacture of (NFPA 651)	
Z12.12-1950	Sulphur Dust Explosions and Fires, Safety Code for the Prevention of (NFPA 655)	
Z12.13-1950	Country Grain Elevators, Code for the Prevention of Dust Ignitions in (NFPA 64)	
Z12.14-1943	Grain Elevators and Storage Units, Suggested Good Practices for the Application of Suction and Venting for the Control of Dust in (NFPA 661)	
Z12.15-1946	Magnesium Powder or Dust, Code for Explosion and Fire Protection in Plants Producing or Handling (NFPA 652)	
Z12.16-1946	Plastics Industry, Safety Code for the Prevention of Dust Explosions in the (NFPA 654)	
Z12.17-1946	Pulverized Fuel Systems, Safety Code for the Installation of (NFPA 60)	
Z14.1-1946	Drawings and Drafting Room Practice	1.50
Z15.1-1932 R1947	Engineering and Scientific Charts for Lantern Slides	.40
Z15.2-1938 R1947	Time-Series Charts, Manual of Design and Construction	1.50
Z15.3-1943 R1947	Engineering and Scientific Graphs for Publications	.90
Z16.1-1945	†Method of Compiling Industrial Injury Rates	.35
Z16.2-1941	†Compiling Industrial Accident Causes Part 1—Selection of Accident Factors Part 2—Detailed Classification of Accident Factors	1.25
Z17.1-1936 R1951	†Preferred Numbers	.50
Z20.3-1950	Places of Outdoor Assembly (Grandstands and Tents) (NFPA 102)	.25

Z21 Gas-Burning Appliances, Approval and Installation Requirements:

Z21.1-1948	Domestic Gas Ranges, Approval Requirements for, with Addenda Z21.1a-1949 (Z21.1a-1949 sold separately 40¢)	2.40
Z21.2-1949	Gas Hose for Portable Gas Appliances, Listing Requirements on	1.00
Z21.3-1940	Hotel and Restaurant Ranges and Unit Broilers, Approval Requirements for, with Addenda Z21.3a-1946 (Z21.3a-1946 sold separately 40¢)	1.40
Z21.5-1940 R1947	Clothes Dryers, Approval Requirements for	Under revision
Z21.6-1949	Domestic Gas-Fired Incinerators, Approval Requirements for	1.50
Z21.8-1948	Installation of Domestic Gas Conversion Burners, Requirements for	1.00
Z21.9-1948	Hot Plates and Laundry Stoves, Approval Requirements for, with Addenda Z21.9a-1949 (Z21.9a-1949 sold separately 40¢)	1.40
Z21.10-1950	Gas Water Heaters, Approval Requirements for, with Addenda Z21.10a-1951 (★Z21.10a-1951 sold separately 25¢)	2.25
Z21.11-1949	Gas-Fired Room Heaters, Approval Requirements for, with Addenda Z21.11a-1950 (Z21.11a-1950 sold separately 40¢)	2.40
Z21.12-1937 R1950	Draft Hoods, Listing Requirements for	.50

		Price
Z21.13	**Central Heating Gas Appliances, Approval Requirements for:**	
Z21.13.1-1951	★Steam and Hot Water Boilers, Volume I	2.00
Z21.13.2-1951	★Gravity and Forced Air Central Furnaces, Volume II	2.00
Z21.13.3-1951	★Gravity and Fan Type Floor Furnaces, Volume III	2.00
Z21.13.4-1951	★Gravity and Fan Type Vented Recessed Heaters, Volume IV	2.00
Z21.15-1944	Gas Valves, Listing Requirements for, with Addenda Z21.15a-1949 (Z21.15a-1949 sold separately 20¢)	.70
Z21.16-1951	★Gas Unit Heaters, Approval Requirements for	1.50
Z21.17-1948	Domestic Gas Conversion Burners, Listing Requirements for	2.00
Z21.18-1934	Domestic Gas Appliance Pressure Regulators, Listing Requirements for **Under revision**	
Z21.19-1942 R1950	Refrigerators Using Gas Fuel, Approval Requirements for	1.00
Z21.20-1951	★Automatic Pilots, Listing Requirements for	1.00
Z21.21-1948	Automatic Main Gas-Control Valves, Listing Requirements for **Out of print**	
Z21.22-1935 R1950	Relief and Automatic Gas Shut-off Valves for Use on Water Heating Systems, Listing Requirements for	.40
Z21.23-1940 R1950	Gas Appliance Thermostats, Listing Requirements for	.50
Z21.24-1941 R1947	Semi-Rigid Gas Appliance Tubing and Fittings, Listing Requirements for	.50
Z21.26-1941 R1950	Attachable Gas Water Heating Units, Listing Requirements for **Out of print**	
Z21.27-1940	Hotel and Restaurant Deep Fat Fryers, Approval Requirements for, with Addenda Z21.27a-1946 (Z21.27a-1946 sold separately 40¢)	1.40
Z21.28-1948	Portable Gas Baking and Roasting Ovens, Approval Requirements for	2.00
Z21.29-1941 R1950	Furnace Temperature Limit Controls and Fan Controls, Listing Requirements for	.50
Z21.30-1950	Installation of Gas Piping and Gas Appliances in Buildings (Not Applicable to Undiluted Liquefied Petroleum Gas)	.25
Z21.31-1941 R1947	Gas Counter Appliances, Approval Requirements for **Under revision**	
Z21.32-1942 R1950	Gas Appliance Connectors of Flexible Metal Tubing and Fittings, Listing Requirements for	.50
Z21.33-1950	Installation of Gas-Burning Equipment in Power Boilers, Requirements for	1.00
Z21.34-1942 R1950	Gas-Fired Duct Furnaces, Approval Requirements for **Under revision**	
Z21.35-1945 R1950	Gum Protective Devices, Listing Requirements for	.50
Z21.37-1948	Dual Oven Type Combination Gas Ranges, Approval Requirements for **Out of print**	

		Price
Z22	**Motion Pictures (see also PH22):**	
	(Special price of Z22 and PH22 series with binder, $14.50)	
Z22.2-1946	†Emulsion and Sound Record Positions in Camera for 35-Millimeter Sound Motion Picture Film	.25
Z22.3-1946	†Emulsion and Sound Record Positions in Projector for 35-Millimeter Sound Motion Picture Film	.25
Z22.4-1941	35-mm Film; Projector Reels **Out of print**	
Z22.5-1947	†16-Millimeter Silent Motion Picture Negative and Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.7-1950	†Picture Aperture of 16-Millimeter Motion Picture Cameras, Location and Size of	.35
Z22.8-1950	†Picture Aperture of 16-Millimeter Motion Picture Projectors, Location and Size of	.35
Z22.9-1946	†Emulsion Position in Camera for 16-Millimeter Silent Motion Picture Film	.25
Z22.10-1947	†Emulsion Position in Projector for Direct Front Projection of 16-Millimeter Silent Motion Picture Film	.25
Z22.11-1941	16-mm Film; Projection Reels **Under revision**	
Z22.12-1947	†16-Millimeter Sound Motion Picture Negative and Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.15-1946	†Emulsion and Sound Record Positions in Camera for 16-Millimeter Sound Motion Picture Film	.25
Z22.16-1947	†Emulsion and Sound Record Positions in Projector for Direct Front Projection of 16-Millimeter Sound Motion Picture Film	.25
Z22.17-1947	†8-Millimeter Motion Picture Negative and Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.19-1950	†Picture Aperture of 8-Millimeter Motion Picture Cameras, Location and Size of	.25
Z22.20-1950	†Picture Aperture of 8-Millimeter Motion Picture Projectors, Location and Size of	.25
Z22.21-1946	†Emulsion Position in Camera for 8-Millimeter Silent Motion Picture Film	.25
Z22.22-1947	†Emulsion Position in Projector for Direct Front Projection of 8-Millimeter Silent Motion Picture Film	.25
Z22.23-1941	8-mm Silent Film; Projection Reels **Out of print**	
Z22.24-1941	16-mm Silent Film; Film Splices—Negative and Positive **Under revision**	
Z22.25-1941	16-mm Sound Film; Film Splices—Negative and Positive **Under revision**	
Z22.27-1947	†Transmission Density of Motion Picture Films, Method of Determining (sold only with Z38.2.5-1946)	.75
Z22.28-1946	†Projection Rooms and Lenses for Motion Picture Theatres, Dimensions for	.25
Z22.29-1948	†Theater Projection Screens, Dimensions for	.25
Z22.31-1946	†Motion Picture Safety Film, Definition for (sold only with Z38.3.1-1943)	.35
Z22.33-1941	Nomenclature for Filters **Out of print**	
Z22.34-1949	†35-Millimeter Motion Picture Negative Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.35-1947	†16-Tooth 35-Millimeter Motion Picture Projector Sprockets, Dimensions for	.25
Z22.36-1947	†35-Millimeter Motion Picture Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.37-1944	†Raw Stock Cores for 35-Millimeter Motion Picture Film	.25
Z22.38-1944	†Raw Stock Cores for 16-Millimeter Motion Picture Film	.25
Z22.39-1944	†Screen Brightness for 35-Millimeter Motion Pictures	.25
Z22.40-1950	†Sound Records and Scanning Area of 35-Millimeter Sound Motion Picture Prints	.25
Z22.41-1946	†Sound Records and Scanning Area of 16-Millimeter Sound Motion Picture Prints	.25
Z22.42-1946	†Sound-Focusing Test Films for 16-Millimeter Sound Motion Picture Projection Equipment, Specifications for	.25
Z22.43-1946	†3000-Cycle Flutter Test Film for 16-Millimeter Sound Motion Picture Projectors, Specifications for	.25
Z22.44-1946	†Multi-Frequency Test Film Used for Field Testing 16-Millimeter Sound Motion Picture Projection Equipment, Specifications for	.25
Z22.45-1946	†400-Cycle Signal Level Test Film for 16-Millimeter Sound Motion Picture Projection Equipment, Specifications for	.25
Z22.46-1946	†16-Millimeter Positive Aperture Dimensions and Image Size for Positive Prints Made from 35-Millimeter Negatives	.25
Z22.47-1946	†Negative Aperture Dimensions and Image Size for 16-Millimeter Duplicate Negatives Made from 35-Millimeter Positive Prints	.25
Z22.48-1946	†Printer Aperture Dimensions for Contact Printing 16-Millimeter Positive Prints from 16-Millimeter Negatives	.25
Z22.49-1946	†Printer Aperture Dimensions for Contact Printing 16-Millimeter Reversal and Color Reversal Duplicate Prints	.25
Z22.50-1946	†Reel Spindles for 16-Millimeter Motion Picture Projectors	.25
Z22.51-1946	†Intermodulation Tests on Variable-Density 16-Millimeter Sound Motion Picture Prints, Method of Making	.25
Z22.52-1946	†Cross-Modulation Tests on Variable-Area 16-Millimeter Sound Motion Picture Prints, Method of Making	.25
Z22.53-1946	†Resolving Power of 16-Millimeter Motion Picture Projector Lenses, Method of Determining	.25
Z22.54-1946	†Freedom from Travel Ghost in 16-Millimeter Sound Motion Picture Projectors, Method of Determining	.25
Z22.55-1947	†35-Millimeter Sound Motion Picture Release Prints in Standard 2000-foot Lengths, Specifications for	.25
Z22.56-1947	†Nomenclature for Motion Picture Film Used in Studios and Processing Laboratories (19½- x 28½-inch reproduction of chart on pages 8 and 9 sold separately 30¢)	.50
Z22.57-1947	†Buzz-Track Test Film for 16-Millimeter Motion Picture Sound Reproducers	.25
Z22.58-1947	†Picture Projection Aperture of 35-Millimeter Sound Motion Picture Projectors	.25
Z22.59-1947	†Photographing Aperture of 35-Millimeter Sound Motion Picture Cameras	.25
Z22.60-1948	†Theater Sound Test Film for 35-Millimeter Motion Picture Sound Reproducing Systems	.25
Z22.61-1949	†Sound Focusing Test Film for 35-Millimeter Motion Picture Sound Reproducers (Service Type)	.25

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Z22.62-1948	†Sound Focusing Test Film for 35-Millimeter Motion Picture Sound Reproducers (Laboratory Type)	.25
Z22.65-1948	†Scanning-Beam Uniformity Test Film for 35-Millimeter Motion Picture Sound Reproducers (Service Type)	.25
Z22.66-1948	†Scanning-Beam Uniformity Test Film for 35-Millimeter Motion Picture Sound Reproducers (Laboratory Type)	.25
Z22.67-1948	†1000-Cycle Balancing Test Film for 35-Millimeter Motion Picture Sound Reproducers	.25
Z22.68-1949	†Buzz-Track Test Film for 35-Millimeter Motion Picture Sound Reproducers	.25
Z22.69-1948	†Sound Record and Scanning Area of Double Width Push-Pull Sound Prints, Normal Centerline Type	.25
Z22.70-1948	†Sound Record and Scanning Area of Double Width Push-Pull Sound Prints, Offset Centerline Type	.25
Z22.71-1950	†32-Millimeter Sound Motion Picture Negative and Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.72-1950	†32-Millimeter Silent Motion Picture Negative and Positive Raw Stock, Cutting and Perforating Dimensions for	.25
Z22.78-1950	†Mounting Frames for Theater Projection Screens, Dimensions for	.25
Z22.79-1950	†16-Millimeter Sound Projector Test Film	.25
Z22.80-1950	†Scanning-Beam Uniformity Test Film for 16-Millimeter Motion Picture Sound Reproducers (Laboratory Type)	.25
Z22.81-1950	†Scanning-Beam Uniformity Test Film for 16-Millimeter Motion Picture Sound Reproducers (Service Type)	.25
Z23.1-1939 R1950	Sieves for Testing Purposes, Specifications for (ASTM E11-39; AASHO M92-42)	.25
Z24.1-1951	★†Acoustical Terminology	1.50
Z24.2-1942	†Noise Measurement	.50
Z24.3-1944	†Sound Level Meters for Measurement of Noise and Other Sounds	.50
Z24.4-1949	†Pressure Calibration of Laboratory Standard Pressure Microphones, Method for the	.75
Z24.5-1951	†Audiometers for General Diagnostic Purposes	.50
Z24.7-1950	†Apparatus Noise Measurement, Test Code for	.50
Z24.8-1949	†Laboratory Standard Pressure Microphones, Specification for	.50
Z24.9-1949	†Coupler Calibration of Earphones, Method for the	.75
Z25.1-1940 R1947	†Rules for Rounding Off Numerical Values	.35
Z26.1-1950	†Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Safety Code for	1.00
Z30.2-1936	Thermal Analysis of Steel (ASTM E14-33) **Under revision**	
Z31-1933	Marking of Gold Filled and Rolled Gold Plate Articles Other Than Watchcases (CS47-34)	.05

Z32 Graphical Symbols (see also Z10 and Y32):

Z32.2-1941	Drawings in Mechanical Engineering, Graphical Symbols for Use on **No longer available**	
Z32.2.1-1949	Welding, Graphical Symbols for	.50
Z32.2.2-1949	Plumbing, Graphical Symbols for	.50
Z32.2.3-1949	Pipe Fittings, Valves, and Piping, Graphical Symbols for	.50
Z32.2.4-1949	Heating, Ventilating, and Air Conditioning, Graphical Symbols for	.50
Z32.2.5-1950	Railroad Use, Graphical Symbols for	.75
Z32.2.6-1950	Heat-Power Apparatus, Graphical Symbols for	.50
Z32.3-1946	†Electric Power and Control, Graphical Symbols for	1.00
Z32.5-1944	†Telephone, Telegraph and Radio Use, Graphical Symbols for	.80
Z32.9-1943	Architectural Plans, Graphical Electrical Symbols for	.40
Z32.10-1948	Electron Devices, Graphical Symbols for	.60
Z32.12-1947	Electric Apparatus, Basic Graphical Symbols for	.60
Z32.13-1950	†Abbreviations for Use on Drawings	1.00
Z33.1-1950	Regulations for the Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal (NFPA 91; NBFU 91)	.35
Z34.1-1947	†Practice for Certification Procedures	.35
Z35.1-1941 R1945	†Industrial Accident Prevention Signs, Specifications for	.75

Z37 Allowable Concentrations of Toxic Dusts and Gases: (Special price of series, $4.00)

		Price
Z37.1-1941	†Carbon Monoxide, Allowable Concentration of	.35
Z37.2-1941	†Hydrogen Sulfide, Allowable Concentration of	.35
Z37.3-1941	†Carbon Disulfide, Allowable Concentration of	.35
Z37.4-1941	†Benzene, Allowable Concentration of	.35
Z37.6-1948	†Manganese, Allowable Concentration of	.35
Z37.7-1943	†Chromic Acid and Chromates, Allowable Concentration of	.35
Z37.8-1943	†Mercury, Allowable Concentration of	.35
Z37.10-1948	†Xylene, Allowable Concentration of	.35
Z37.11-1943	†Lead and Certain of Its Inorganic Compounds, Allowable Concentration of	.35
Z37.12-1943	†Toluene, Allowable Concentration of	.35
Z37.13-1944	†Oxides of Nitrogen, Allowable Concentration of	.35
Z37.14-1944	†Methanol, Allowable Concentration of	.35
Z37.16-1944	†Formaldehyde, Allowable Concentration of	.35
Z37.18-1949	†Methyl Chloride, Allowable Concentration of	.35
Z37.19-1946	†Trichloroethylene, Allowable Concentration of	.35

Z38 Photography (other than Cinematography): (Special price of series with binder, $25.00)

Z38.1.1-1951	★†Film Packs, Dimensions for (Revision of Z38.1.1-1941 and Z38.1.2-1941)	.25
Z38.1.3-1948	†70-Millimeter Perforated (and Unperforated) Film (Cutting and Perforating Standard), Dimensions for	.25
Z38.1.5-1943	†Photographic Papers — Inch Wide Rolls, Dimensions of	.25
Z38.1.6-1943	†Photographic Papers—Centimeter Size Sheets and Rolls, Dimensions of	.25
Z38.1.7-1950	†Amateur Roll Film, Backing Paper, and Film Spools, Dimensions for (Revision of Z38.1.7-1943 through Z38.1.24-1943)	.75
Z38.1.25-1947	†Industrial X-Ray Sheet Film (Inch Sizes), Dimensions for	.25
Z38.1.26-1947	†Graphic Arts Sheet Film (Inch Sizes), Dimensions for	.25
Z38.1.27-1947	†Medical X-Ray Sheet Film (Inch and Centimeter Sizes), Dimensions for	.25
Z38.1.28-1947	†Professional Portrait and Commercial Sheet Film (Inch Sizes), Dimensions for	.25
Z38.1.29-1949	†Professional Portrait and Commercial Sheet Film (Centimeter Sizes), Dimensions for	.25
Z38.1.30-1951	†Photographic Dry Plates (Inch Sizes), Dimensions for	.25
Z38.1.31-1944 R1949	Photographic Dry Plate (Centimeter Sizes), Dimensions for	.25
Z38.1.32-1944	†5¼- x 2¼-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.33-1945	†5½- x 2⅜-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.34-1945	†7- x 1 7/16-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.36-1945	†7- x 2¾-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.37-1945	†7- x 4⅜-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.38-1945	†9½- x 4-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.39-1945	†9½- x 5 5/16-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.40-1945	†9½- x 6⅝-Inch Aerial Film Spools, Dimensions of	.25
Z38.1.41-1944	†Leaders, Trailers, and Roll Film for Aerial Photography, Dimensions for	.25
Z38.1.42-1944 R1948	†Emulsion Side of Photographic Sheet Film, Designation of	.25
Z38.1.43-1947	†Inch Size Photographic Papers, Dimensions of	.25
Z38.1.44-1944	†Thickness of Photographic Paper, Designation for	.25
Z38.1.47-1946	†35-Millimeter Film Magazines for Still Picture Cameras, Dimensions for	.25
Z38.1.48-1947	†Moulded Type Cores for Photographic Film and Paper Rolls, Dimensions of	.25
Z38.1.49-1951	★†35-Millimeter Magazine Film (for Miniature Cameras), Dimensions for	.25
Z38.1.50-1948	†Radiographic Intensifying Screens, Dimensions for	.25
Z38.1.51-1951	★†Photographic Double Film Holders of the Lock-Rib Type, Dimensions for	.25
Z38.1.52-1951	★†16-Millimeter 100-Foot Film Spool for Recording Instruments and Still Picture Cameras, Dimensions for	.25
Z38.1.53-1951	★†16-Millimeter 200-Foot Film Spool for Recording Instruments and Still Picture Cameras, Dimensions for	.25
Z38.1.54-1951	★†35-Millimeter 100-Foot Film Spool for Recording Instruments and Still Picture Cameras, Dimensions for	.25
Z38.1.55-1951	★†70-Millimeter 100-Foot Film Spool for Recording Instruments and Still Picture Cameras, Dimensions for	.25
Z38.2.1-1947	†Photographic Speed and Exposure Index, Method for Determining	.50
Z38.2.2-1949	†Photographic Exposure Computer (Special quantity discounts apply.)	1.00
Z38.2.3-1947	†Sensitometry of Photographic Papers	.35

NOTE: Minimum charge on any purchase is $0.25.

		Price
Z38.2.4-1946	†Spectral-Sensitivity Indexes and Group Numbers for Photographic Emulsions, Method for Determining	.50
Z38.2.5-1946	†Diffuse Transmission Density	.75
Z38.2.6-1948	†General-Purpose Photographic Exposure Meters (Photoelectric Type)	.50
Z38.3.1-1943 R1948	Definition of Safety Photographic Film	.35
Z38.3.2-1945	†Films for Permanent Records, Specifications for	.50
Z38.3.3-1946	†35-Millimeter Slidefilm Projection Rolls, Specifications for	.25
Z38.4.1-1942	†Cameras (Tripod Connections for American Cameras)	.25
Z38.4.2-1942	†Cameras (Tripod Connections for European Cameras with Adapter for American Tripods)	Under revision
Z38.4.3-1947	†Distance Scales Marked in Feet for Focusing Camera Lenses	.25
Z38.4.4-1942 R1947	†Focal Lengths of Lenses, Marking	.25
Z38.4.5-1950	†Shutter Cable Release Tip and Socket with Taper (European) Thread	.25
Z38.4.6-1950	†Shutter Cable Release Tip and Socket with Straight (American) Thread	.25
Z38.4.7-1950	†Lens Aperture Markings	.25
Z38.4.8-1950	†Roll Film Cameras, Picture Sizes for	.25
Z38.4.9-1944	†Back Window Location for Roll Film Cameras	.25
Z38.4.10-1944 R1952	†Front Mounts for Camera Lenses, Dimensions of	.25
Z38.4.11-1944	†Threads for Attaching Mounted Lenses to Photographic Equipment	.25
Z38.4.12-1944	†Attachment Thread Specifications for Camera Lens Accessories	.25
Z38.4.13-1948	†Distance Scales Marked in Meters for Focusing Camera Lenses	.25
Z38.4.19-1948	†Nomenclature, Parts of a Photographic Objective Lens	.35
Z38.4.20-1948	†Apertures and Related Quantities Pertaining to Photographic Lenses, Methods of Designating and Measuring	.25
Z38.4.21-1948	†Focal Lengths and Focal Distances of Photographic Lenses, Methods of Designating and Measuring	.35
Z38.4.26-1951	†Flash Synchronizing Equipment, Bi-post-Type, Connecting Cord Ends and Pins	.25
Z38.4.27-1951	†Flash Synchronizing Equipment, Bayonet-Type, Connecting Cord Ends and Pins	.25
Z38.7.4-1944 R1948	†Projectors for Opaque Materials for Use in Small Auditoriums, Specifications for	.25
Z38.7.5-1948	†Printing and Projection Equipment, Methods of Testing	.25
Z38.7.6-1950	†Photographic Enlargers, Methods for Testing	.35
Z38.7.8-1947	†Microfilms, Practice for	.25
Z38.7.9-1946	†Microfilm Readers, Specifications for	.25
Z38.7.10-1944 R1948	†Contact Printers, Specifications for	.25
Z38.7.11-1944 R1952	†Printing Frames, Specifications for	.25
Z38.7.12-1944 R1948	†Masks (Separate), Specifications for	.25
Z38.7.14-1949	†Lantern Slide Projectors, Specifications for	.25
Z38.7.15-1945	†Slidefilm Projectors, Specifications for	.25
Z38.7.16-1947 R1952	†Resolving Powers of Lenses for 35-Millimeter Slidefilm and 2- x 2-Inch Slides, Method for Determining	.25
Z38.7.17-1946	†Reels for Processed Microfilm	.25
Z38.7.19-1950	†Lantern Slides, Dimensions for	.25
Z38.7.20 -	†Lantern Slide and Slidefilm Projection, Practice for (Proposed American Standard; published for trial and criticism)	.25
Z38.8.1-1944 R1948	†Temperature of Processing Solutions, Practice for	.25
Z38.8.2-1945	†Conversion of Weights and Measures for Photographic Use, Practice for	.25
Z38.8.3-1947	†Photographic Processing Manipulation of Films and Plates, Practice for	.50
Z38.8.4-1945	†Bite of Film Clips, Dimensions for	.25
Z38.8.6-1949	†Photographic Processing Manipulation of Paper, Practice for	.50
Z38.8.7-1946	†Radiographic Film Processing Tanks, Internal Dimensions for	.25
Z38.8.8-1946	†Deep Tanks for Commercial Photofinishing, Internal Dimensions for	.25
Z38.8.9-1946	†Scales, Graduates, and Thermometers for Use in Photography, Accuracy of	.25
Z38.8.10 -	†Photographic Laboratory Timers (Proposed American Standard; published for trial and criticism)	.25
Z38.8.11-1948	†Photographic Thermometers	.25
Z38.8.12-1948	†Photographic Graduates	.25
Z38.8.13-1950	†Safety-Time of Photographic Darkroom Illumination, Procedure for Determining the	.25
Z38.8.14-1950	†Photographic Wetting Agents, Requirements for	.25
Z38.8.17-1948	†Permanency of the Silver Images of Processed Films, Plates, and Papers, Method for Predicting the	.25
Z38.8.18-1948	†Chromium-Plated Surfaces for Ferrotyping	.25
Z38.8.19-1948	†Maximum Safe Temperatures for Photographic Processing Solutions, Method for Determining	.25
Z38.8.20-1948	†Melting Point of the Photographic Layer of Films, Plates, and Papers, Method for Determining the	.25
Z38.8.21-1950	†Photographic Filing Envelopes for Storing Processed Photographic Films, Plates, and Papers, Requirements for	.25
Z38.8.23-1949	†X-Ray Sheet Film Hangers (Clip-Type)	.25
Z38.8.25-1950	†Residual Thiosulfate and Tetrathionate in Processed Photographic Papers, Method for Determining	.35

Specifications for Photographic Grade Chemicals:

Acids

Z38.8.100-1949	†Acetic Acid, Glacial	.25
Z38.8.101-1949	†Sulfuric Acid	.25
Z38.8.102-1949	†Citric Acid	.25
Z38.8.103-1949	†Boric Acid, Crystalline	.25
Z38.8.104-1949	†Hydrochloric Acid	.25
Z38.8.106-1949	†Acetic Acid, 28 Percent	.25

Developing Agents

Z38.8.125-1948	†Mono-Methyl-Para-Aminophenol Sulfate (Armol, Elon, Genol, Graphol, Metol, Photol, Pictol, Rhodo, Verikol)	.25
Z38.8.126-1949	†Hydroquinone (Para - Dihydroxybenzene, Quinol, Hydrochinone, Hydroquinol)	.25
Z38.8.127-1948	†2, 4-Diaminophenol Hydrochloride (Acrol, Amidol, Dianol, Dolmi)	.25
Z38.8.128-1949	†Para-Hydroxyphenylglycin (Athenon, Glycin, Iconyl, Monazol)	.25
Z38.8.129-1948	†Para - Aminophenol Hydrochloride (Kodelon, P.A.P.)	.25
Z38.8.130-1948	†Pyrogallic Acid (1,2,3-Trihydroxybenzene, Pyro, Pyrogallol)	.25
Z38.8.131-1948	†Catechol (Ortho - Dihydroxybenzene, Pyrocatechin, Pyrocatechol)	.25
Z38.8.132-1948	†Para-Phenylenediamine (1,4-Diaminobenzene)	.25
Z38.8.133-1948	†Para - Phenylenediamine Dihydrochloride (1,4-Diaminobenzene Dihydrochloride)	.25
Z38.8.134-1948	†Chlorhydroquinone (2-Chlor-1,4-Dihydroxybenzene, Adurol, C.H.Q.)	.25

Hardeners

Z38.8.150-1949	†Aluminum Potassium Sulfate, Crystalline	.25
Z38.8.151-1949	†Chromium Potassium Sulfate, Crystalline	.25
Z38.8.152-1949	†Formaldehyde Solution	.25
Z38.8.153-1949	†Paraformaldehyde	.25

Miscellaneous

Z38.8.175-1949	†Sodium Sulfate, Anhydrous	.25
Z38.8.176-1949	†Sodium Acetate, Anhydrous	.25
Z38.8.177-1949	†Potassium Dichromate	.25
Z38.8.178-1949	†Potassium Permanganate	.25
Z38.8.179-1949	†Potassium Ferricyanide	.25
Z38.8.180-1949	†Copper Sulfate	.25
Z38.8.181-1949	†Potassium Persulfate	.25
Z38.8.182-1949	†Sodium Sulfide, Fused	.25

Restrainers and Antifoggants

Z38.8.200-1949	†Potassium Bromide	.25
Z38.8.201-1948	†Potassium Iodide	.25
Z38.8.202-1948	†Potassium Chloride	.25
Z38.8.203-1948	†Sodium Chloride	.25
Z38.8.204-1948	†Benzotriazole	.25
Z38.8.205-1948	†5-Methylbenzotriazole	.25
Z38.8.206-1948	†Nitrobenzimidazole	.25

Alkalies

Z38.8.225-1948	†Sodium Hydroxide	.25
Z38.8.226-1948	†Potassium Hydroxide	.25
Z38.8.227-1948	†Sodium Carbonate, Monohydrate	.25
Z38.8.228-1948	†Sodium Carbonate, Anhydrous	.25
Z38.8.229-1948	†Potassium Carbonate	.25
Z38.8.230-1948	†Sodium Tetraborate	.25
Z38.8.231-1948	†Sodium Metaborate	.25
Z38.8.232-1948	†Ammonium Hydroxide	.25

Fixing Agents

Z38.8.250-1949	†Sodium Thiosulfate, Anhydrous	.25
Z38.8.251-1949	†Sodium Thiosulfate, Crystalline	.25

Sulfites

Z38.8.275-1948	†Sodium Sulfite	.25
Z38.8.276-1949	†Sodium Bisulfite	.25
Z38.8.277-1948	†Potassium Metabisulfite	.25
Z39.1-1943	†Reference Data and Arrangement of Periodicals	.25

		Price
Z41	**Specifications for Protective Occupational Footwear: (American War Standards)**	
Z41.1-1944	†Men's Safety-Toe Shoes	
Z41.3-1944	†Men's Conductive Shoes	
Z41.4-1944	†Men's Explosives - Operations (Non-sparking) Shoes	.75
Z41.5-1944	†Men's Electrical-Hazards Shoes	
Z41.6-1944	†Men's Foundry (Molders) Shoes	
Z41.2-1944	†Women's Safety-Toe (Oxford) Shoes	
Z41.7-1944	†Women's Safety-Toe (High) Shoes	Out of Print
Z41.8-1944	†Women's Explosives-Operations (Non-sparking) Shoes	
Z41.9-1944	†Women's Conductive Shoes	
Z43-1941	†Grinding, Polishing and Buffing Equipment Sanitation	.75
Z44-1942	**Replaced by Z58.7.1, 2, 3-1951**	
Z48.1-1942	†Marking Compressed Gas Cylinders to Identify Content, Method of	.25
Z49.1-1950	Electric and Gas Welding and Cutting Operations, Safety in	.50
Z50.1-1947	†Bakery Equipment, Safety Code for	1.00
Z52	**Photography and Cinematography: (American War Standards)**	
Z52.20-1944	†Positive and Negative Splices for Processed 16-mm Sound Motion Picture Film	.25
Z52.33-1945	Reels and Reel Containers; 16-mm Motion Picture Projection, Specification for (JAN-R-214)	Gratis
Z52.43-1944	Photographic Flash Lamps, including Supplement Z52.43a (Federal Specification W-L-122 and Supplement)	.10
Z52.50-1946	**Replaced by PH22.76-1951**	
Z52.51-1946	**Replaced by PH22.74-1951**	
Z52.62-1946	†Exposure Time Markings for Between-the-Lens Shutters	.25
Z52.63-1946	†Method of Determining Performance Characteristics of Between-the-Lens Shutters Used in Still Picture Cameras	Out of print
Z52.65-1946	†Method of Determining Performance Characteristics of Focal-Plane Shutters Used in Still Cameras	Out of print
Z53.1-1945	†Marking Physical Hazards and the Identification of Certain Equipment, Safety Color Code for (American War Standard)	.35
Z54.1-1946	†Industrial Use of X-Rays, Safety Code for the (American War Standard)	1.50
Z55.1-1950	†Gray Finishes for Industrial Apparatus and Equipment Color Chips representing Gray Finishes according to Z55.1-1950 $2.25	.35
Z58.1.2-1952	★†Colorimetry, Nomenclature and Definitions in the Field of	In press
Z58.7.1-1951	★†Spectrophotometric Measurement for Color, Method of	
Z58.7.2-1951	★†Determination of Color Specifications, Method for	.50
Z58.7.3-1951	★†Expressing Color Specifications, Alternative Methods for	
Z60.1-1949	Horticultural Standards — Nursery Stock	.50
Z61.1-1949	†Home Cooking and Baking Utensils, Dimensions, Tolerances, and Terminology for	.35

CS — Commercial Standards

The following Commercial Standards, promulgated by the National Bureau of Standards, have been approved by ASA.

		Price
CS8-41	Gage Blanks (American Standard B47.1-1941)	Out of print
CS19-32	Foundry Patterns of Wood (American Standard B45.1-1932)	Out of print
CS47-34	Marking of Gold Filled and Rolled Gold Plate Articles Other Than Watchcases (American Standard Z31-1933)	.05
CS49-34	Chip Board, Laminated Chip Board, and Miscellaneous Boards for Bookbinding Purposes	Out of print
CS50-34	Binders Board	.05
CS51-35	Marking Articles Made of Silver in Combination with Gold	.05
CS53-35	Colors and Finishes for Cast Stone	.05
CS54-35	Mattresses for Hospitals	.05
CS55-35	Mattresses for Institutions	Out of print
CS57-40	Book Cloths, Buckrams and Impregnated Fabrics for Bookbinding Purposes except Library Bindings	.05
CS67-38	Marking Articles Made of Karat Gold	Out of print
CS99-42	Gas Floor Furnaces (Gravity Circulating Type)	.05

NOTE: Minimum charge on any purchase is $0.25.

American Safety Standards

(Special Price of Complete Set, $45.00)

(These are also included in the preceding general list)

		Price
A2.1-1942	Fire Tests of Building Construction and Materials, Methods of (ASTM E119-41)	Under revision
A2.2-1942	Fire Tests of Door Assemblies, Methods of (ASTM E152-41)	.25
A9.1-1951	★Building Exits Code (NFPA 101)	1.00
A10.1-1951	★Manual of Accident Prevention in Construction	3.00
A10.2-1944	†Building Construction, Safety Code for	1.75
A11-1942	Industrial Lighting	.25
A12-1932	†Floor and Wall Openings, Railings and Toe Boards, Safety Code for	.50
A13-1928 R1947	Identification of Piping Systems, Scheme for the	.60
A14.1-1948	†Wood Ladders, Safety Code for	.50
A17.1-1937	Elevators, Dumbwaiters, and Escalators, Safety Code for, with Supplement A17.3-1942	1.50
A17.2-1943	Elevators, Inspection of (Inspectors' Manual)	1.50
A23.1-1948	School Lighting (AIA 31-F-28)	.50
A39-1933	†Window Cleaning	.35
A85-1942	†Protective Lighting for Industrial Properties (American War Standard)	Out of print
A90.1-1949	Manlifts, Safety Code for	.35
B7.1-1947	Use, Care, and Protection of Abrasive Wheels, Safety Code for	.75
B8-1932	†Protection of Industrial Workers in Foundries, Safety Code for	.35
B9.1-1950	Mechanical Refrigeration, Safety Code for (ASRE Circular 15-R)	1.00
B11.1-1948	†Power Presses and Foot and Hand Presses, Safety Code for	1.25
B13-1924	Logging and Sawmill Safety Code (NBS Handbook H5)	Out of print
B15-1927	Mechanical Power-Transmission Apparatus, Safety Code for	Under revision
B19-1938	Compressed Air Machinery and Equipment, Safety Code for	.40
B20.1-1947	Conveyors, Cableways and Related Equipment, Safety Code for	.90
B24.1-1952	★†Forging and Hot Metal Stamping, Safety Code for	In press
B28.1-1949	†Mills and Calenders in the Rubber Industry, Safety Code for	1.00
B30.1-1943	Jacks, Safety Code for	.40
B30.2-1943	Cranes, Derricks, and Hoists, Safety Code for	1.80
B31.1-1951	Code for Pressure Piping	3.50
B56.1-1950	Industrial Power Trucks, Safety Code for	.85
C1-1951	National Electrical Code (NBFU 70; 4 x 6¼ in.) (Paper bound NFPA 70; 4¼ x 7¼ in. $1.00) (Cloth bound NFPA 70; 6 x 9 in. $3.00)	.10

C2 National Electrical Safety Code (NBS Handbook H30), $1.75 (also parts sold separately)

C2.1-1941 R1947	Installation and Maintenance of Electrical Supply Stations, Safety Rules for the (NBS Handbook H31)	.10
C2.2-1941 R1947	Installation and Maintenance of Electric Supply and Communication Lines, Safety Rules for the (NBS Handbook H32)	.75
C2.3-1941 R1947	Installation and Maintenance of Electric Utilization Equipment, Safety Rules for the (NBS Handbook H33)	.20
C2.4-1939 R1947	Operation of Electric Equipment and Lines, Safety Rules for the (NBS Handbook H34)	.20
C2.5-1940 R1947	Radio Installations, Safety Rules for (NBS Handbook H35)	.15

C5 Protection against Lightning, Code for (NBS Handbook H40):

C5.1-1937	Part I, Protection of Persons	Under revision
C5.2-1937	Part II, Protection of Buildings and Miscellaneous Property	
C5.3-1944	Part III, Protection of Structures Containing Flammable Liquids and Gases	
C59.12-1942	Replaced by J6.6-1952	
C74-1942	†Machine Tool Electrical Standards (American War Standard)	Out of print
D6.1-1948	Uniform Traffic Control Devices for Streets and Highways, Manual on	.75
D7.1-1941	†Inspection Requirements for Motor Vehicles	.35
D8.1-1951	★Railroad Highway Grade Crossing Protection (AAR Bulletin 3)	.50
D10.1-1951	★Adjustable Face Traffic Control Signal Head Standards (ITE Technical Report 1)	.50
D11.1-1943	Pre-Timed, Fixed Cycle, Traffic Signal Controllers (ITE Technical Report 2)	.50
D12.1-1947	Street and Highway Lighting	.50
D13.1-1950	Traffic-Actuated, Traffic Signal Controllers and Detectors, Specifications for	.50

J6 Specifications for Rubber Protective Equipment for Electrical Workers:

J6.1-1950	Rubber Insulating Line Hose (ASTM D1050-49T)	.50
J6.2-1950	Rubber Insulator Hoods (ASTM D1049-49T)	
J6.4-1950	Rubber Insulating Blankets (ASTM D1048-49T)	
J6.5-1950	Rubber Insulating Sleeves (ASTM D1051-49T)	
J6.3-1945	†Leather Protective Gloves (American War Standard)	.25
J6.6-1952	Rubber Insulating Gloves, Specifications for (ASTM) (Revision of C59.12-1942)	In press
K13.1-1950	†Identification of Gas-Mask Canisters, Safety Code for	.35
L1.1-1947	†Textile Safety Code	.50

L18 Specifications for Protective Occupational (Safety) Clothing (American War Standards):

L18.1-1944	†Leather Aprons	.50
L18.2-1944	†Cape Sleeves and Bibs	
L18.3-1944	†Knee-Length Leggings	
L18.4-1944	†Leather Coats	.50
L18.5-1944	†Leather Overalls	
L18.6-1944	†Leather Sleeves	
L18.7-1944	†Welders' Leather Gauntlet Gloves	.50
L18.8-1944	†Protective Leather Gloves, Steel-Stapled	
L18.9-1944	†Asbestos Gloves	
L18.10-1944	†Asbestos Gloves, Leather Reinforced	
L18.11-1944	†Asbestos Mittens	
L18.12-1944	†Asbestos Mittens, Leather Reinforced	
L18.14-1944	†Asbestos Aprons (Bib Type)	.50
L18.15-1944	†Asbestos Cape Sleeves and Bibs	
L18.16-1944	†Asbestos Leggings (Knee and Hip Length)	
L18.17-1944	†Asbestos Coats	
L18.18-1945	†Leather One-Finger Mittens	.50
L18.19-1945	†Leather Mittens	
L18.20-1945	†Asbestos One-Finger Mittens	
L18.21-1945	†Flame-Resistant Fabric Aprons (Bib Type)	.50
L18.22-1945	†Flame-Resistant Fabric Leggings (Knee and Hip Length)	
L18.23-1945	†Flame-Resistant Fabric Coats	
L18.24-1945	†Flame-Resistant Fabric Pants	
L18.25-1945	†Flame-Resistant Fabric Coveralls	
L18.26-1945	†Flame-Resistant Fabric Spats	.50
L18.27-1945	†Leather Spats	
L18.28-1945	†Asbestos Spats	
L18.29-1945	†Chemical-Resistant Gloves	.35
M2.1-1951	★Installing and Using Electrical Equipment in Coal Mines, Safety Rules for (BMTP 402)	In press
M11-1927	Wire Rope for Mines	Under revision
M12.1-1946	†Construction and Maintenance of Ladders and Stairs for Mines	.35
M13-1925 R1942	†Rock-Dusting Coal Mines to Prevent Coal Dust Explosions	.25
M14-1930	†Explosives in Bituminous Coal Mines, Use of	.35
M15-1931	†Coal Mine Transportation, Safety Code for	.35
M17-1930	†Fire Fighting Equipment in Metal Mines	Gratis
M24-1932	†Installing and Using Electrical Equipment in Metal Mines, Safety Rules for	Gratis
O1.1-1944	†Woodworking Machinery, Safety Code for	.75
P1-1936	†Paper and Pulp Mills, Safety Code for	Under revision
Z2-1938	Protection of Heads, Eyes and Respiratory Organs, Safety Code for (NBS Handbook H24)	Under revision
Z4.1-1935	†Industrial Sanitation in Manufacturing Establishments, Safety Code for	.50
Z4.2-1942	†Drinking Fountains, Specifications for	.25
Z4.3-1935	Sanitary Privy (Supplement 108 to the Public Health Reports)	Under revision—Out of print
Z8-1941	†Laundry Machinery and Operations, Safety Code for	.35
Z9	†Fundamentals Relating to the Design and Operation of Exhaust Systems (Report published for comment)	.50
Z9.1-1951	†Ventilation and Safe Operation of Open-Surface Tanks	.75

NOTE: Minimum charge on any purchase is $0.25.

		Price
Z12 Dust Explosions:		
Z12.1-1946	Pulverized-Coal Systems, Safety Code for the Installation and Operation of (NFPA 60A)	3.00
Z12.2-1944	Starch Factories, Safety Code for the Prevention of Dust Explosions in (NFPA 61A)	
Z12.3-1946	Flour and Feed Mills, Safety Code for the Prevention of Dust Explosions in (NFPA 61C)	
Z12.4-1950	Terminal Grain Elevators, Safety Code for the Prevention of Dust Explosions in (NFPA 61B)	
Z12.5-1942	Woodworking Plants, Safety Code for the Prevention of Dust Explosions in (NFPA 663)	
Z12.6-1946	Sugar and Cocoa, Safety Code for Pulverizing Systems for (NFPA 62)	
Z12.7-1946	Coal Pneumatic Cleaning Plants, Safety Code for the Prevention of Dust Explosions in (NFPA 653)	
Z12.8-1946	Wood Flour Manufacturing Establishments, Safety Code for the Prevention of Dust Explosions in (NFPA 662)	
Z12.9-1946	Spice Grinding Plants, Safety Code for the Prevention of Dust Ignitions in (NFPA 656)	
Z12.10-1943	Inert Gas for Fire and Explosion Prevention, Safety Code for the Use of (NFPA 12A)	
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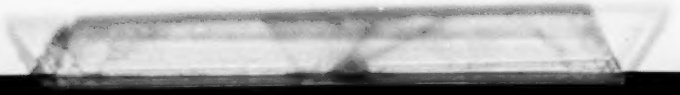

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